Report of

The Maryland Agricultural Society—Maryland Farm Bureau Federation,

INCLUDING REPORTS OF THE

Maryland State Horticultural Society,
Maryland Crop Improvement Association,
Maryland State Dairymen's Association,
Maryland State Beekeepers' Association,
Maryland Vegetable Growers' Association,
Maryland Sheep Growers' Association,
Maryland Tobacco Growers' Association,
Maryland Swine Growers' Association,
Home and Community Committee Meeting,
Beef Cattle Conference,
4-H Club Conference.

REPORT OF THE

MARYLAND AGRICULTURAL SOCIETY

THE

MARYLAND FARM BUREAU FEDERATION

INCLUDING THE REPORTS OF

THE MARYLAND STATE HORTICULTURAL SOCIETY
THE MARYLAND CROP IMPROVEMENT ASSOCIATION
THE MARYLAND STATE DAIRYMEN'S ASSOCIATION
THE MARYLAND STATE BEEKEEPERS' ASSOCIATION
THE MARYLAND VEGETABLE GROWERS' ASSOCIATION
THE MARYLAND SHEEP GROWERS' ASSOCIATION
THE MARYLAND TOBACCO GROWERS' ASSOCIATION
THE MARYLAND SWINE GROWERS' ASSOCIATION
HOME AND COMMUNITY COMMITTEE MEETING
BEEF CATTLE CONFERENCE
4-H CLUB CONFERENCE

VOLUME XII, FOR THE YEAR 1927

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PUBLISHED BY THE SOCIETY, MAY 1, 1928.
EDITED BY M. M. STEWART AND T. B. SYMONS,
BALTIMORE, MD.

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MARYLAND AGRICULTURAL SOCIETY

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LETTER OF TRANSMITTAL

To His Excellency, Albert C. Ritchie,
Governor of Maryland

SIR:

I herewith submit to you, as directed by the Act incorporating the Maryland Agricultural Society, and also the Horticultural Society, this report for the year 1927, which contains a detailed statement of the receipts and expenditures of the Society as approved by the Executive Committee and Advisory Council. It contains the proceedings of the twelfth annual meeting of the Maryland Agricultural Society, Maryland Farm Bureau Federation, and annual meetings of the Affiliated Associations.

I trust that an inspection of its contents will convince you that the funds appropriated for this purpose have been wisely and judiciously expended.

Respectfully submitted,

M. M. STEWART,
Secretary

May 1, 1928,

Baltimore, Md.

THE MARYLAND AGRICULTURAL SOCIETY
THE MARYLAND FARM BUREAU FEDERATION

1105 Union Trust Building,

Baltimore, Md.

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1928

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Sheep Growers' Association, Humphrey D. Wolfe.....Glenwood
Tobacco Growers' Association, Geo. I. Gardiner.....Baltimore
Beekeepers' Association, Dr. J. R. Abercrombie.....Baltimore
Vegetable Growers' Association, B. I. Sparks.....Baltimore
Swine Growers' Association, W. L. Horney.....Corbett
Home and Community Council, Mrs. Harry T. Williams.....Worton

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Dr. H. J. Patterson, Director, Experiment Station, College Park, Md.
Mr. A. G. Ensor, Master, State Grange, Forest Hill, Md.

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1928

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President, Senator Humphrey D. Wolfe.....Glenwood
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Executive Vice-President, George I. Gardiner,
State Tobacco Warehouse.....Baltimore
Manager, J. C. Brown, State Tobacco Warehouse.....Baltimore

Swine Growers' Association

President, N. R. Harvey.....Corbett
Vice-President, D. B. McDowell.....Nottingham, Pa.
Secretary-Treasurer, B. E. Carmichael.....College Park

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REPORT
of
TWELFTH ANNUAL MEETING
of the
Maryland Agricultural Society
the
Maryland Farm Bureau Federation

BALTIMORE, MARYLAND

JANUARY, 3rd, 4th, and 5th, 1928

The First Session of the Twelfth Annual Meeting of the Maryland Agricultural Society—Maryland Farm Bureau Federation, held in the ballroom of the Hotel Rennert, Baltimore, Maryland, convened at two twenty-five o'clock, James W. Davis, President, presiding.

PRESIDENT JAMES W. DAVIS: The meeting will come to order, please. Let us open our meeting by singing "America."

(The audience arose and sang "America.")

VICE-PRESIDENT E. THOMAS MASSEY: Our program is a little bit mixed up and a little delayed. I will now introduce to you our President of the Maryland Farm Bureau Federation, Mr. James W. Davis, who will make his Annual Address. (Applause).

PRESIDENT'S ANNUAL ADDRESS

BY J. W. DAVIS, Rocks, Md.

PRESIDENT DAVIS: Fellow farmers, it gives me a lot of pleasure to see a gathering of this kind. It gives me pleasure to see the interest that everybody shows in the farmers' problems and in the farmers' occupation. I have attended a good many farmers' meetings lately, but I don't think

I have seen anywhere anything that looks better to me than our own Maryland people.

(At this point His Excellency, Albert C. Ritchie, Governor of Maryland, entered the room. Applause).

PRESIDENT DAVIS: It gives me a great deal of pleasure to welcome our Governor. I don't know whether he owns a farm or not, but from the interest he has taken in us farmers, and from the way he has always been ready to help us, I believe he ought to be a farmer anyway! (Applause). If he doesn't have a farm we ought to make him an Honorary Farmer at least!

As I was saying, it gives me a lot of pleasure to see the interest shown by our Maryland farmers, and I know that we have had our troubles, but a farmer doesn't always want to go around talking about his troubles. I believe it might be said of this gathering what I heard a fellow say out in Chicago where we were having a meeting something like this, probably a bigger audience. Anyway, some man from the town came into the hotel and wanted to know where that farmers' meeting was, and they took him around to where it was, and he looked in and said, "Those fellows are not farmers, they look like bankers!" I believe we could almost say that about this gathering.

I want to say that if you are expecting an address from me, or a speech, it is something you all know me well enough not to expect, because you know I can't make a speech. So I will just have to give you a few thoughts, and then I am going to turn this meeting over to some one else.

I was at a meeting out at Rockville a little over a year ago, and they told me I was expected to make a speech, and I was to be followed by some Senator from Washington. Well, you know about how I felt when I found out I was supposed to make a speech and a Senator was going to be there and listen to it. I hurried along (I didn't have much of a speech anyway), and finished before the Senator got there, and it certainly took a big burden off my shoulders.

That is about the way it ought to turn out this afternoon. Maybe I haven't got a lot of ability, but some times I have been lucky! Last year at our Annual Meeting the Home

and Community Chairman asked me to make an address before a lot of ladies at the Home and Community meeting. I hadn't had any time to prepare an address, and wondered what I was going to say. Just about the time I was getting ready to go into that meeting, along came President Sam Thompson. I thought to myself that that certainly was lucky for me, and made up my mind I would roll that right over on him. So I brought Mr. Thompson up and introduced him, and he made the talk and I sat back and listened. I tell you, I just felt a lot better.

This afternoon we have our Governor with us, and I know you are all going to be a lot more interested in hearing what he has got to say than in hearing what I will say, and I think the Mayor of this town is going to make us a little talk after a bit, so I won't have very much to say.

However, there are some things I should say. We hear a good bit about this farm relief proposition. That may not appeal to the Eastern farmer. He hasn't had the pressure these last few years the Western farmer has had. Of course, we are here close to the markets, and we have gotten a fair price for our products, but the Western farmer, by the time he pays the freight and gets his produce to the Eastern Seaboard and gets it across to Europe where the price of most of our farm produce is really set, sometimes doesn't have much left. He has had a lot of trouble. The banks out there have had trouble. They have had to take over farms, and it has gotten so out in that Middle West and in the Northwest that if a man has any money at all, some bank will turn over a good farm to him, and they will almost pay him to take it. The situation has been so bad that many of the farmers who had $10,000.00 and $15,000.00 invested in farms of their own money just moved away and said, "Take it, I can't pay the interest on the mortgage."

That has been the situation there. I know that lots of us Eastern folks are half-hearted about this farm relief proposition. We think it doesn't affect us much, but it will affect us; it is already affecting us, but it will affect us to a greater extent as the years go by if we don't do something to change this proposition. A lot of the Western farmers

are going into the dairy business, and they are producing more milk and more butter and shipping it into our Eastern markets, and right now, if it wasn't for the peculiar position in which we are situated and the fact that we have the Maryland State Dairymen's Association to protect our interests, we wouldn't be getting the price for our milk that we are getting. Those men out there are continually trying to get into the Eastern market. As I say, while we may think that matter doesn't concern us and that we shouldn't help them, it certainly will concern us if we don't help.

We have another organization in this state that has done a lot for the farmer, and that is the Maryland Tobacco Growers' Association. I know that our tobacco growers have gotten more money than they ever thought they'd get. When the war was over they thought the price of tobacco would go down, but owing to the way it has been marketed and the way that proposition has been handled, the price of tobacco is almost as high today as it was during the war. I think the 1925 census shows that the Southern Maryland incomes haven't been deflated; their incomes are still about what they were in war time. So we can see what the Tobacco Growers' Association is doing for them.

It is not much use to say anything about the Dairymen. We all know what they have done. They have put the upper end of this state on the map, and lots of farmers are prosperous today who wouldn't have been if they hadn't had that Association.

Another thing that has been of some benefit to the farmer—I can't say very much about it, because two years ago they put me at the head of it; maybe I have made some mistakes, but I want to draw your attention to the Agricultural Corporation of Maryland. We have done a nice business for the farmer and saved him lots of money on his feed even if he didn't buy from us, because the other man has mostly made his price to suit ours. If he can get his price as low as ours or lower, he will get some business, but that doesn't mean his feed will be as good as ours.

It is the same with fertilizer. We have saved the farmer lots of money on his fertilizer proposition. I can't say

anymore about that, because I am too closely tied up with it, and I might be accused of blowing my own horn.

There is another thing all our farmers are interested in. We have been very much interested in good roads and good schools. In order to have those things, somebody has to pay the bill. The Baltimore City people think they ought not to have too much of their tax money spent to build roads and to supply schools in the counties. Perhaps they are right, but as far as the counties are concerned (I am speaking now mostly of the county people), it seems to me the time has come when we should look into those tax matters very closely in our counties. We must see that we don't let this thing keep getting bigger and bigger. I know that schools are a thing we need, but in our county I think we are levying three or four times as much for schools as we did ten years ago, and I think in other counties the same thing is the case. I think our roads will be taken care of through this gasoline tax. I think that was a good thing for the farmer. I do think we have got to look into these tax questions very closely and see that our money is well taken care of and wisely spent.

Now, as I told you about my trip over to Rockville, I think we will have these other speakers who will interest you a lot more than I will, and I will certainly be glad to turn this meeting over to the next speaker, whom Mr. Massey will introduce.

VICE-PRESIDENT MASSEY: It gives me great pleasure to introduce to you the Mayor of Baltimore, Hon William F. Broening.

ADDRESS OF WELCOME

BY HON. WILLIAM F. BROENING, Mayor of Baltimore

Mr. Chairman, Your Excellency, Ladies and Gentlemen:

It is always a great privilege to be present at conventions that are held in our city and to extend a greeting upon behalf of our people to those who gather in our midst, but this is an unusual pleasure to extend a greeting to the people of our own state who have come here to this great metropolis in order that they might deliberate and take an inventory

of things that have gone on before, and to catch an inspiration that will be helpful and useful in the work that lies before you.

It is well that you should come at this season of the year when everybody is more charitably inclined, when souls have become mellow, and when there is a spirit on every hand to be of help and service to each other. At this particular time of the year, I have always been impressed—a remarkable change takes place in the life of almost every individual, for there is at this season of the year a desire upon the part of the most selfishly inclined, a disposition to at least extend good wishes and greetings to his fellow men.

But in late years we find that this mellowness is manifesting itself in a desire to be of some tangible service to others, and especially to children. I have often wondered what it is. I think we can attribute it to nothing else except a great inspiration that has come down through the centuries from that great character whose birthday is commemorated at this season of the year. And when we say "catch the Christmas spirit," we mean nothing more or less than to be Christlike. It means that that life has stood forth through all the years as a splendid example for living.

It is well that we should at least once a year check up, and it has this effect—that at least, it halts us in our selfish purpose, whatever it may be, and it is a great contribution from an economic standpoint to the life of the people of the whole world; for it halts them in this great pursuit of building, and struggling, and striving to achieve and to accomplish. It is like a man who has been bent headlong upon a race—a momentary check will probably prevent him from plunging over a precipice, and just that momentary check will divert men from a course which otherwise might mean destruction. It is the same with a race horse; a slight check might divert him and prevent him from going along the line which would mean impending danger. And so it checks up the whole world; it checks up the individual, and for the time being he forgets self and selfishness, gives a thought to others, and then begins again with at least a life thus far mellowed

by this temporary check and this influence because of the thought of that great character.

That seems to have been the underlying thought responsible for bringing into being associations such as this—men and women recognizing that after all, we have things in common. We owe it to each other, and in association we can find that help and that inspiration which enables us to achieve and accomplish all the better.

It seems that associations have brushed aside the old idea that people engaged in the same line cannot be friendly to each other; that competition suggests a rivalry that must almost amount to enmity. And so associations have the effect of bringing together men and women and mellowing their souls, bringing about an understanding and making them understand that after all, they should have regard and consideration for the rights of others.

In that spirit, in the spirit of the season, in commemoration of this great life, I greet you to Baltimore and extend you a most cordial welcome. I hope that your deliberations will be animated in the same spirit, that as a result of this convention and this conference you shall leave here with a better understanding, and inspired all the better to do the work that lies before you. On behalf of the people of Baltimore I extend to each and every one of you the greetings of the season, and wish for you a New Year of happiness and prosperity, and express the hope that in the homes of each and every one, happiness, contentment, and peace may ever abide with you! (Applause).

PRESIDENT DAVIS: I will now ask Mr. E. Thomas Massey, our Vice-President, to make the response. (Applause).

RESPONSE TO ADDRESS OF WELCOME

BY E. THOMAS MASSEY, Chestertown

Mr. Mayor, your words of welcome to this farm organization we appreciate very much. You know, the farmer likes to come to town once in a while. We have tried to meet in other places in this state, but none of the meetings ever seem to be very successful, because these farm folks like to

come to the city once in a while, and this is a good opportunity. They also, I think, like to rub elbows with city people, and the Farm Bureau would like city people to catch some of their viewpoints on these farm situations.

You know the Farm Bureau is set up by having little local organizations in each community, and then all the communities in that county federated into a county organization, then the counties federated into a state federation, and the states into a national organization. At the ninth annual convention of the American Farm Bureau Federation at Chicago last month, 41 states were represented. They had 1,400 delegates and something like 2,500 others attending that convention; something like 1,800 counties are organized, and some 45 states have the organizations in them.

This organization by the farmers is the last of any group to try to organize, and they are organized for their own protection and advancement. The farmers have had pretty hard sledding for the last seven years, and it looks like they will always have pretty hard sledding unless they can get together and protect themselves by organization. As Senator Copeland said the other day, everything the farmer bought was bought on the protected list, yet, in 1926 the United States Steel dividend amounted to $199,000,000.00, and they have a high protective tariff which raises the price of all steel. The farmers use 52 per cent. of all the steel made in America. So who has paid the bill but the farmer?

Here are some other figures that are worth while. In 1926 the consumers of this country paid for farm products $22,500,000,000.00. Of that amount the farmer received $7,500,000,000.00. Somebody in between the consumer and the producer got $15,000,000,000.00. Now, you all know, if we had a little bit of that $15,000,000,000.00 we'd be in better circumstances. As it is, a great many farms are mortgaged, and while our organization is very thin in the East, the West is very well organized.

I was reading the other day about our Louisiana purchase. It seems that the farmers who went over the mountains prior to 1800 and began to raise some crops had no outlet except through the Gulf of Mexico, and they had to

go through Spanish territory, and the Spaniards took a commission off for letting them go through that territory with their goods to market. It was the insistent demand of these farmers that brought about the Louisiana purchase and saved for this country the Mississippi Valley. I was thinking at that convention the other day that maybe the farmers over the Rockies are going to save us in the United States, that is, the farmers in the United States from peasantry. Unless we have a strong organization and can get equal rights, that is where we are heading.

The Farm Bureau stands for the best, stands for efficient production, stands for better marketing conditions, stands for higher standards of living, and stands for well-rounded communities, and the farmers in the organization have only been asking, I think, for what are their rights.

I again wish to thank you for your kind words of welcome. I don't think any of this bunch will give your city policemen any trouble! (Applause).

PRESIDENT DAVIS: We will now have a song, Maryland, My Maryland."

(The audience arose and sang, "Maryland, My Maryland.")

PRESIDENT DAVIS: It now gives me great pleasure to introduce to you His Excellency, Governor Albert C. Ritchie, of our State.

ADDRESS

BY HIS EXCELLENCY, ALBERT C. RITCHIE, Governor of Md.

Mr. Chairman, Ladies and Gentlemen:

It is a very great pleasure to greet the members of this organization again this year, not, as the Mayor has said, to welcome them, because you happen to be a Maryland organization; but it is a pleasure to meet at least annually the very representative group which assembles, usually in Baltimore, for our Farm Bureau Federation convention.

I suppose what ought to be said on an occasion of this kind is something that might be useful, or at least interesting to the discussions of the conference. I might perhaps

be nominated some day as an Honorary Farmer as Mr. Davis so kindly suggested, but I don't expect that by any stretch of the imagination I could be made a "dirt farmer" or a practical farmer such as I see before me this afternoon. Although the land and farm questions have been concerning mankind since the days of Tiberius Claudius on down to the present days of the McNary-Haugen Bill, I think we ought to recognize that discussions, to be useful, should be undertaken by those who are thoroughly trained in and equipped in and qualified in the subject. So all that I will say on the discussions which are about to ensue, is naturally of a more or less rambling and very general nature.

It certainly is true, as Mr. Davis has indicated, that we are starting another year with the same farm depression which existed during the past seven years—if not the same, at least, a very distinct and unmistakable agricultural depression. It varies, of course, in different parts of the country, and as Mr. Davis again said, we are very happy that our part of the country is not one which has been hit as hard as the other sections of our nation. We are favored in Maryland. We are close to centers of distribution and centers of consumption, so our railroad freight bills are not as large as they are in the Northwest and in the West. We have developed I think, a pretty effective and fine system of crop rotation. Our dairy products are a most important factor in Maryland farm life, and as has been said, our dairy organization renders most effective help to make that line of industry more profitable. It is so with the tobacco organization and with others, too, though perhaps not to the same full extent as in the case of tobacco and as in the dairy field. For these and other reasons as I say, Maryland is favored compared with the Northwest and the West. We haven't suffered from the mortgage hammer on the auction block to anything like the extent that other communities have, and yet, while that may be true, it is also true that the general depression exists even though it varies in different parts of the country, and even though some sections like Maryland, are better off than others.

The problem, therefore, of agricultural depression is a live, vital, breathing, national problem to be decided on some sound and economic national lines. It is easy to speculate about what the causes of it may be. One of them which appeals to me and which is one reason, as I say, why Maryland is not as badly off as other sections are, is the enormous difference between the cost of products at the farm and the price which those products bring in the retail market. That spread of figures was given you by Mr. Massey. The existence of that spread is one of the reasons why in the agricultural situation the law of supply and demand can't settle the whole thing.

The law of supply and demand does, I take it for granted, settle the retail prices in the retail market, and if the farmer got his fair share of that retail price perhaps the solution would be at hand, and perhaps the problem would not exist as it does. But a tremendous part of that spread between the cost at the farm and the cost in the market doesn't go into the farmer's pocket at all, but does go into the pockets of railroads and various distributing agencies, and of course, the farmer is only practically interested in the retail price to the extent that he gets that retail price for himself. He gets such a small portion of it that that is one of the serious causes of the depression. But the point which I wanted to make wasn't that so much, but is this—that in this day you can't blame agricultural depression on this spread between costs at the farm and costs at the retail market; you can't blame it on speculation in farm land; you can't blame it on over-production; you can't blame it on high taxes; you can't blame it on any other thing and simply let it go at that. Agriculture is too basic an industry to the lives and the happiness and the prosperity and the necessity of our whole country to attach the blame to some economic cause and say, "Well, that is the end of it,"—because some kind of a solution, and of course, some kind of a sound solution nationally has got to be attained.

One trouble, it seems to me, is that the farmer has approached his agricultural difficulties in too much of an indivdualistic way, hasn't been organized enough. Labor is

organized, finance is organized, industry is organized, every line of American activity is compactly and thoroughly and effectively organized except the farmer. He is doing better. Perhaps it is inherently in him, in the way that he lives and the distances between farms, inherent in his circumstances that he has been the last to wake up to the necessity of a compact organization for his own protection; but nevertheless, the necessity for that unmistakably exists.

The result of there not being any compact national farm organization is that there isn't any national remedy; there are not any national measures of relief upon which the farmers generally agree. They are not behind as a body some one concrete measure which they think is economically sound and will meet their situation and will help it and will relieve it. We have different measures suggested, interesting, important, and advocated and supported by highly responsible sources of influence. We have groups which want the McNary-Haugen Bill with its equalization fee feature; we have the groups which advocate the support of the debenture plan; we have the groups which advocate a revision in the tariff, we have groups which advocate the Governmental idea of Governmental credit and storage facilities; and other groups have their own plans, which doubtless have merit in them.

It seems to me that the diversified nature, the diversified character, the differences between the various methods which are advanced to relieve the farmer is certainly one important reason why no adequate relief has yet been brought about. It takes concentration, takes coördination to bring relief to any great group of the American people, and particularly is that true in the case of agriculture, which is inherently national in its scope.

I don't suppose that any one could charge me with unduly leaning towards Governmental aid or Governmental subsidies. I am a great believer (as I believe most Maryland people are) in the inherent ability of the American citizen to help himself, to work himself out of his business and economic and industrial difficulties. And yet, we have got to be fair about the situation, and I think I am fair

enough to see that Government is helping pretty nearly every line of American activity to a greater extent than Government is helping the farmer. The Government helps the railroads; it helps labor; it helps finance, and it helps industry. It helps the railroads by guaranteeing a fixed return on the investment of those who own the railroads, so that their profits are secure. The Government helps industry by a high protective tariff on many if not most industrial commodities. The Government helps labor by restricted immigration laws which prevent additional labor and additional workmen from coming into our country. The Government helps finance through its Federal Reserve Bank and other Banking provisions. Now, is it any wonder (it isn't to me) that when the farmer stands by and sees the Government thus helping the great field of American labor (and none of us want it to do otherwise than succeed), when the farmer stands by and sees the Government helping the railroads (and we all of us want their good service to continue), and when the farmer stands by and sees the Government helping finance (and all of us want it to be on a sound and secure and protected basis), and when the farmer stands by and sees the Government helping industry (and we all want industry to prosper), it isn't any wonder to me that when the farmers see the Government helping all these lines of American activity he begins to wonder when in the world his turn is going to come. (Applause).

Of course, that isn't any reason for adopting any unsound remedy. It isn't any reason for jumping at too experimental a measure of relief. The farmer no more than any one else wants any measures for his supposed relief which won't work, and particularly which won't work in the long run, and the thing which strikes me about the whole situation is that all of these basic lines of American activity, transportation, industry, labor, and finance are inter-related with your problem of agriculture and farming. Whatever affects one affects the other. You can't do anything important in one of those lines of American activity without its having its reaction on your line and other lines of basic American activity, too.

If railroad rates are too high, that affects the farmer. It increases the cost of marketing his product, and it decreases his ability to fill the returning cars with the goods which he buys and needs for himself. If the tariff on industrial commodities is too high, why, that increases the cost of them and makes it harder for the farmer to pay. And in turn that decreases the market for industry itself. If our labor laws are too restricted, that decreases the ability of the farmer to get the labor on the farm which the cultivation of his land may need. And so each one of these industries or activities, basic to American life, are all corelated and interrelated.

The sensible thing would be for them all to sit down together and talk and thresh the whole thing out. That is what we do in any line of business. If you are in business and some question comes up which affects you and your neighbor and his neighbor, you three sit down around a table and talk the thing over, discuss the effect which this particular question has on each of you, and you get it on a working basis and get at a sound solution somehow.

These lines of American activity have never done that. The railroads are organized, and they procure the measures which will guarantee them a fair return, and having gotten them, they are not particularly interested about the ability of the other fellow to pay them. The labor interests are organized, and they secure such restricted immigration laws as will help their organization. Nobody blames them for doing it. It is in their interest. But they haven't any particular interest in the effect of restricted immigration on the fellow who, like you, may want more labor.

The industrial activities are organized. They secure the high protective tariff which will enable them to earn profits and, if you please, survive, but they don't do it with particular regard to the ability of other lines of people to pay the costs which those high protective tariffs entail. And so each one of our basic American industries through its own organization looks out for itself. In looking out for itself none of them pay very much attention to the effect which the measures they advocate are going to have upon other

lines of American activity which are inter-related and co-related with them.

I can't help but think, and in a recent trip I made to Nebraska the suggestion interested a good many people because it was so simple, and because it ought to have been done, that if representatives of labor, of agriculture, of transportation, of industry and of finance would sit around a table together, having been properly chosen and selected, and would in good faith undertake to see how the farmers' difficulties, and depression, and problems ought to be solved, giving here and giving there when necessary, but recognizing that prosperity for the farmer reflects itself in increased prosperity to all the others, and that depression for the farmer reflects itself in increased depression on all the other lines—if we could ever have that kind of an honest, good, faithful, conscientious conference I think we would at least be started on the road to whatever the sound economic solution of the question may be, and I think we'd get that, have an honest endeavor on the part of all lines of American activity to settle this question and remove the farmers' depression and help them as much as they could be helped. I think if we had such a conference we'd be on the road toward solution, if the farmer question hadn't gotten as much as it has into politics and hadn't become the source of demagogic appeals for people who, while they may incidentally want to help the farmer, in reality want to make the farmer think they want to help him in order to get his vote to send them to Congress.

As I said in the beginning, I have made no pretense of knowing just what the sound solution is. I make no pretense of anything except recognizing the problem, that the problem exists, except recognizing that the Government does help other basic lines of American industry, and we ought to ask and get an answer to the question—is there a sound economic way in which the Government can help the farmer? (Applause).

Primarily, it is a national question, of course. No state can settle it. I expect, I certainly hope that Maryland is doing as much as a single state can do for the benefit of its

farmers. If it isn't, certainly your organizations are equipped, and certainly I, myself, and the state administration are ready to do what little we can to bring about measures of relief which you think a single state can do. I believe we are doing as much, perhaps, as one state can do. We want to back up and support such organizations as your dairy organization, as the tobacco organization, any other market facilities which you want. We have a pretty good coöperative marketing law, laws on the subject of fertilizer, and in various respects I hope that Maryland as a state is doing whatever one state can do to back up its farming community.

The question, therefore, comes back, it seems to me, where we began, to one of coöperation and coördination and organization. The job of the Maryland farmer is to get the brains together (and they exist in its ranks), to get the industries and labor to work with you, to hit on what in conjunction with others seems to be the sound solution for the nation to make, and to advance and advocate that solution to the full extent of your ability.

That, again, isn't possible without organization, and I'd like to see this organization not only as compact and effective as it is, but extending itself much more, becoming much more comprehensive, and therefore, much more helpful, and useful, and constructive.

Again let me express my pleasure in being here for a short while this afternoon, and in greeting again the very representative group of the representative agricultural population of Maryland! (Applause).

PRESIDENT DAVIS: I will now appoint the committees.

Resolutions Committee

E. T. MASSEY
J. W. JONES
J. W. LORD
C. A. DUVALL
W. S. SPENCER
CHARLES CHESSER
MRS. H. T. WILLIAMS

Credentials Committee

CHARLES T. COCKEY, JR.
M. FRANK HOLTER
CARROLL LOWE
JOHN C. FISHER
CHARLES I. BOYLE

I want at this time to introduce a man to you—I think you all know him—a man who represents one of our sister organizations, and a man that has always worked hand in hand with us, and I think he is really as much of a Farm Bureau member as he is a Granger, Senator A. G. Ensor, Master of the State Grange. (Applause).

ADDRESS

BY SENATOR A. G. ENSOR, Master Md. State Grange.

Mr. Chairman, Ladies and Gentlemen:

I feel somewhat like a minister who was called on to take a certain part in a play. There were certain things he was supposed to say, and one of the things was, "My God." He refused to say it, so finally they persuaded him to say, "My Gosh." As I came into the meeting this afternoon I took my place in the rear row with some friends, feeling quite at home, very contented, and your Vice-President walked back and caught me by the arm and said, "The President wants to see you a minute." I walked up here, and he told me he wanted me to say a few words.

I started out to say in regard to this minister—there was a little boy back in the audience with a pop gun who was supposed to shoot him with a cork, and he was supposed to say, "My Gosh, I'm shot." The little boy put some red ink on the cork, and when it struck the minister and he saw the red ink he said, "My Gosh, I *am* shot!" (Laughter).

I don't know what your President had in mind. He said he wanted me to say something in regard to the Grange, however. I don't know whether he wanted me to tell you he wanted you all to join the Grange or not. I will let him say that a little later, because I'd be too modest to make that statement myself!

However, I am pleased to be here in this Farm Bureau meeting, and in looking over the audience it looks very much as if it were a Grange meeting. I see a great many Grangers in this audience whose faces are very familiar, and it has been a custom in this state, I think, in all of our Farm Bureau meetings and Grange meetings, wherever they are held, to have as many Farm Bureau members as there are Grangers in the Grange meetings, and to have as many Grangers as Farm Bureau members in the Farm Bureau meetings. We find (I think Mr. Davis will bear me out) that the counties that are strong as Grangers are today the counties that have the largest and strongest Farm Bureau Locals in the state. So I think that is evidence that the Grange is interested in farm organization in this state. The Grange welcomes the Farm Bureau Locals or County Farm Bureaus wherever they are, and they have coöperated and worked with the Farm Bureau ever since it has been brought into this state.

So my friends, it gives me a great deal of pleasure to bring to you today greetings of the Maryland State Grange. We would welcome greetings from the Farm Bureau at any of our State Grange meetings. We extended an invitation to your President to meet with us in Easton, but on account of national business, he was called to Chicago, so could not be with us in our State Grange Meeting at Easton. However, we are always glad to welcome any Farm Bureau officers at any of our State or Local or County Grange meetings.

One thing I feel about our farm organizations, as the Governor has stated, we do not sit down and talk things over from man to man as we should. And I don't believe we talk our organization as much as we should when we are back on the farm. Sometimes we get around in the stores or blacksmith shops, and you will hear some of them say anything but what is a credit to the farm organizations. Of course, you know we generally get out of an organization what we put into it, so therefore, I think and feel that we should be a little bit more loyal to our organization. You elect your officers, and in a great many istances you feel they are your Farm Bureau, but friends, it certainly is not

going to be a success unless you put your shoulder to the wheel and support your locals.

It also gave me a great deal of pleasure to hear His Excellency, the Governor, when he made the remarks in regard to the desire and readiness of the state administration to support measures that are for the best interests of agriculture. It was my privilege to be Chairman of the Committee on Agriculture at Annapolis this last session, and I want to say for the Governor that there was no measure at any time that went before His Excellency but that he was willing to coöperate and sign the bills that they might become laws for the interest of the farmers of this state. (Applause). To my knowledge, if the farmers of this state didn't get what they wanted, it was because they didn't ask for it. I think every measure that was put before the session was passed and signed.

So friends, it certainly is encouraging to have these words from His Excellency, and I am sure as long as he remains Governor of this state that you will have it.

I don't know that I care to take up any more of your time. I am not supposed to give a talk. I think what the Chairman had in mind was for me just to bring the greetings from our State Grange.

I am reminded of a story I heard one time that happened in Europe during the war. There was a colored company in charge of a white captain, and this captain was a little bit concerned about this company, whether they were going to stand fire or not. Just before they got ready to go over the top he went up to one of the colored soldiers and said, "Jim, we are about ready to go over the top. Are you boys all right?"

"Yes, Captain, I think we are all right."

The Captain said, "How about it if when you get out of the trenches you meet five or six German soldiers with bayonets ready to pierce you, what would you do?"

He said, "Captain, I surely would spread the news!" (Laughter).

I hope when you Farm Bureau folks go back home you will spread the news in regard to your State Farm Bureau, your

Local Farm Bureaus, and your County Farm Bureaus, and if you do that I think this meeting will have been a success.

I thank you! (Applause).

PRESIDENT DAVIS: The next thing on our program is the Annual Report of our Secretary, Mr. Stewart. I think these reports are sometimes considered to be rather dry, but I think if you will pay close attention to Mr. Stewart's report you will get a whole lot out of it that maybe you won't get any other way. Mr. Stewart. (Applause).

MR. STEWART:

Before I start on my report, I want to say this: I went to considerable trouble just about the middle of the summer to ask a gentleman to come on here to Maryland to make an address to you. He is the one who is to follow me. His speech was so good, and so fine, and so fitting that the National organization asked him to repeat that address that he had made at the Cedar Lake Farm Bureau Conference in Indiana—to repeat it at the National Meeting in Chicago. Mr. Head did so, and I will say that his was the only speech that was made in the convention that caused the delegates to rise upon their feet and ask for copies of it so they could take it home. I am informed that already 500 copies of that speech have been distributed on individual requests that were made for it. So I hope all will stay here and hear Mr. Depew Head, and I hope he repeats word for word the address that he gave at Cedar Lake, Indiana, and again at Chicago, in December.

ANNUAL REPORT FOR 1927

M. M. STEWART, SECT'Y-TREAS.,
Maryland Farm Bureau Federation.

Mr. President, Fellow Farm Bureau Members, Ladies and Gentlemen:

For the fifth time it becomes my privilege and duty to report as your Secretary-Treasurer of the Maryland Agricultural Society—Maryland Farm Bureau Federation concerning the activities of the organization and some of the problems confronting us.

State Legislation

Immediately following the close of our anuual meeting in Baltimore last January, your Secretary transferred his activities to Annapolis as the Legislative representative of your organization.

I found Governor Ritchie, as in the past, very sympathetic to the farmers' problems and ready to do anything reasonable and within his power.

The same can be said about the majority of the members,—Senate and House of Delegates. Due appreciation must be expressed for the courtesy and general interest in agricultural matters of the two presiding officers,—namely Senator David G. McIntosh, of Baltimore County, President of the Senate, and the Hon. E. Brooke Lee, of Montgomery County, Speaker of the House of Delegates.

Due credit must be especially given to Senator A. G. Ensor, of Harford County, as Chairman of the Senate Agricultural Committee and to the Hon. Louis McLane Merryman, of Baltimore County, Chairman of the Agricultural Committee of the House of Delegates.

It must not be taken for granted, however, that all was easy sailing. Opposition was always furnished from some source.

Over 500 bills of city, county or state-wide interest were passed by the Legislature and not a few affected the farmer directly or indirectly. May I mention a few of them?

Everyone was intensely interested in the Gasoline Tax legislation which increased the tax 2 cents per gallon. This measure had our indorsement and support as directed by our last annual meeting and by our Board of Directors.

Senate Bill 463, covered several omissions and errors in our coöperative marketing law passed originally in 1922. This passed without opposition, as did House Bill 357, regulating the sale of oleomargarine.

Senate Bill No. 165, eliminated the franchise tax against practically all milk trucks and "exempted trucks hauling milk to cooling stations or railroad platforms in the counties" from the payment of the franchise tax on a ton-mile

basis. This measure did not get through without considerable work to overcome opposition from several sources.

The bill to which we registered our greatest opposition was a so-called administration measure known as House Bill 171, covering the activities of the automobile commissioner's office. We registered our opposition to that portion of the bill which increased the cost of tags and registration on pneumatic tire motor vehicles equipped with commercial bodies (namely all forms of trucks) from 32 cents per horsepower to 70 cents per horsepower.

The cost of tags on a Ford truck would have been raised from $7.36 to $16.10, an increase of $8.74 per year.

Yet the same bill provided that the tags for 1 ton capacity trucks equipped with solid tires would cost only $10.00 per year.

I am sorry to report that an appeal to our county and local community organizations and officers received little support and the bill would have passed in its original form but for the support we were able to secure as a result of over 2,000 letters sent out from your state office to business firms in Baltimore city.

J. W. Jones, President of the Montgomery County Farm Bureau, called the state organization's attention to a defect in the State Seed Law under which a seedsman was exempted from prosecution for misstatements as to the germination of the seed they sold.

Conferences with Baltimore seedsmen were held. At first they expressed their opposition to any change in this feature of the law. Later they fell in line and worked with us for the passage of Senate Bill No. 326 which wiped out this exemption feature of the law.

A committee consisting of J. W. Jones, Wm. G. Scarlett (representing Baltimore Seedsmen) and your Secretary conferred with Governor Ritchie, calling his attention to the unsatisfactory condition of the germination equipment of the State Seed Laboratory, also to lack of sufficient help to permit promptness in testing and reporting results.

The Governor met this situation promptly by arranging for sufficient funds.

I won't tire you further with details regarding other matters of state legislation, but will say that we were 100% successful in our legislative program.

National Farm Relief

Your State Federation, in line with the resolution passed at the last annual meeting, again supported the National Organization in its championship of the so-called McNary-Haugen Farm Relief Bill. President Davis and I went to Washington and made personal calls upon our Maryland congressional representatives, urging that they support this bill. Although the bill passed Congress, it was vetoed by the President. Congressmen Gambrill and Zihlman, of Maryland, voted for the Bill. Senators Weller and Bruce and Congressmen Linthicum, Hill and Tydings voted against it—while Congressman Goldsborough was ill at the time and unable to vote.

Tomato Tariff

Again in line with the resolution passed by our last Convention, your state office has brought all the pressure to bear it could during the past year to have the United States Tariff Commission order an investigation of the tariff pertaining to canned tomatoes imported into this country. In our fight we enlisted the aid of the Washington office of the American Farm Bureau Federation. On June 24th, 1927, we were advised that the Commission had at last ordered an investigation on tomatoes prepared or preserved in any manner. This investigation is now going on, but we do not know what the final outcome will be.

Support of the National Farm Bureau

Speaking with reference to support given us by the Washington office of the American Farm Bureau Federation concerning the tomato tariff it would be of interest to you perhaps, to know that the state office has gone down the line 100% in support of the national organization in its legislative program at Washington. Our authorizations for this were the resolutions passed at the last annual meeting. The

National organization has also rendered us considerable service from angles other than legislation. We have had occasion to call upon the general counsel for guidance in certain legal matters, on the transportation department, on the publicity department, on the finance department and on the Home and Community Department. We have found them always ready to work shoulder to shoulder with us on any matter in which they could be of assistance.

Bureau Farmer

We have just completed one year using the Bureau Farmer as the publicity organ for the Maryland Farm Bureau Federation. We believe our members have received a very much more attractive magazine than they did when we were publishing the Maryland Farm Bureau Co-op. In its physical appearance, the new magazine has carried a more attractive cover, the press work has been excellent and the quality of paper entirely satisfactory. A goodly portion of the magazine in each issue has carried quite a variety of news matter touching national subjects which we were unable to run in our own state paper. In addition to this, we have always had our own eight-page section to carry state and local news. We have been able to finance this new paper with the subscription funds dedicated for that purpose.

The old Co-op was costing us about $4,000.00 per year. Quite a contrast and saving, isn't it?

Newark Rural Route Case

The work of our state office covers a great many phases. We never know from what direction the next call for service will come. For example, during the year we received an appeal from our Farm Bureau members at Newark, Worcester County, Maryland, urging us to help them retain their rural free delivery route out of the Newark Post Office. To show the value of organization, this protest, originating in the Newark Local, and by them brought to the attention of the Worcester County Farm Bureau, was then brought to the state office. The state organization enlisted the aid of the Washington office of the National Federation. With a

well defined campaign outlined and every division of the organization functioning, we were able to convince the United States Post Office Department that the preponderance of evidence and sentiment in Worcester County was in favor of continuing the route out of the Newark Post Office rather than split it up among several other offices. The Post Office Department acted favorably in this matter and the route is still being operated out of Newark.

Japanese Beetle

Just across our borders, the Japanese Beetle pest has been present in great numbers, with the resultant quarantine of the infested area by the Federal Horticultural Board. During this past year the Federal scouts found several of the insects in a few isolated spots in this state. Their plan was to extend the quarantine to the major portion of this state.

A meeting was called October 5th by our State Horticultural officials to convene in Washington. Your Secretary was present representing your organization. Orchardists, florists, nurserymen, truckers, etc., were also present.

As a result of the complete discussion of the case at that meeting, the Maryland representatives, including your secretary, went before the Federal Horticultural Board, the next morning, October 6th, with a definite plan. We succeeded in securing the approval of the Board to the Maryland proposition of permitting our state officials to treat the several individual isolated spots rather than quarantine a large portion of our area.

Such a quarantine method would have included thousands of square miles of area entirely free of the insect and would have left isolated infested spots, like sparks from a forest fire, to set fire and spread unchecked into the surrounding free area.

We believe that our Maryland plan of fighting the isolated spots will hold the pest in check better than the blanket quarantine method. The Federal Board has agreed to permit us to demonstrate the possibilities of our Maryland plan.

Corn Borer

The corn Borer is just across our state line. Soon we will find the corn fields of our beloved state a battle ground. It will be a case of the "survival of the fittest." The fittest farmer will be one filled with knowledge concerning this pest and its control. It will not be a one-man fight. Organization and team work will be needed. Are you Maryland farmers ready for the fray?

Co-operative Purchasing

The Coöperative Purchasing movement in Maryland has continued to gain strength and importance. There has been the closest kind of coöperation between the State Farm Bureau office and the office of the Agricultural Corporation of Maryland. This has been especially true since the Corporation has been under the managment of your own Farm Bureau President, James W. Davis. Mr. Davis and I have worked hand in hand in promoting the feed pool and the two seasonal fertilizer pools.

Coöperative purchasing in Maryland as is now done through the Agricultural Corporation of Maryland, the Maryland Tobacco Growers' Association and the various independent activities of some of the county groups will total in round figures about two millions of dollars a year. Our whole effort in coöperative purchasing has been to pool a volume of orders, to purchase the very highest quality of product possible at the lowest price commensurate with the quality of goods and service rendered.

We are glad to report a material improvement in the financial condition of several of the county coöperative associations handling this coöperative purchasing. The year 1927 has seen several of these organizations at last come out of the red and submit a financial statement which shows a healthier, stronger condition.

Wool Marketing

In 1926 we marketed some wool for our Maryland farmers through the Maryland Farm Bureau Wool Pool, Inc.

This latter organization was a member of a central wool marketing sales agency known as the Eastern Wool Growers'

Federation. The coöperative wool pooling associations of Virginia and West Virginia were also members of the Federation.

In 1927 the three states decided to work separately, owing to the withdrawal of Virgina. Therefore, in 1927, the Maryland Farm Bureau Wool Pool, Inc., operated under the direct supervision of your Secretary.

The 1927 consignments were assembled at a concentration warehouse, and then sold in one lot. We were able to net back to the growers 41 cents per pound after paying various charges. Wools sold in the counties this past year at an average of 35c to 38c per pound. Some growers advised your state office that they had sold at 30c and 32c per pound. We believe our sale of 41c net was a very creditable showing. Surely here is one field of marketing that can be developed and should have the support of every wool grower in the state.

Dairy Improvement

Dairy improvement work has covered several activities during the past year. The Eastern Shore territory has been in the process of eradicating tubercular cattle in that area. The losses have approximated about 30%,—in many cases whole herds being lost. This has been especially disastrous to many of the tenant farmers who have not had funds with which to replace their losses.

Your state Secretary acting in coöperation with officials of the Kent County Farm Bureau recently visited Wisconsin to make a study of the quality of Dairy cattle available for replacements and the price which our farmers would have to pay for them. An experimental lot of one car load has been shipped into Kent County. The Kent County Farm Bureau and one of the local banks are coöperating in this matter.

Your state Secretary also was invited to travel with the Better Sires Train of the B. and O. Railroad. Several stops were made and dairy improvement subjects were discussed in meetings on the train. At two stops, sixteen pure-bred dairy sires were sold to the farmers who visited the train.

Live Stock Marketing

Coöperative Live Stock Marketing has been a subject investigated and studied for several years. There have been several drawbacks to establishing such coöperative marketing in this section:

First: Lack of concentration in any one area of a sufficient volume.

Second: Because of the first reason a lack of local organization to assemble and ship the stock.

As a result it has been impractical and impossible to establish a coöperative Producer Commission Company on the Baltimore market.

At the Annual Meeting of the American Farm Bureau Federation in December last, Mr. E. P. Cohill and your Secretary opened negotiations with Mr. F. G. Ketner, Secretary-Treasurer of the National Live Stock Producers Association whereby our producers may avail themselves of the purchasing facilities of the National Live Stock Producers Association through which to secure feeder cattle, hogs and feeder lambs, also to use the Eastern States Company owned by the same National Producers Association as the medium through which to sell this finished product direct from producer to the packers.

This whole proposition has possiblities that should be followed up and developed.

Automobile Insurance

For sometime we have foreseen that automobile insurance was needed by every farmer in the state of Maryland, especially when less than 15% carry any protection whatever. The time is fast coming when this will be a compulsory matter by law. A little over a year ago we made arrangements with one Insurance Company whereby we secured a 25% discount over the old line conference rates. This, however, was even too expensive for our farmers, and only a few availed themselves of it. Since then we have been studying the matter more in detail. By direction of the State Board of Directors, a contract has been signed with the Farm Bureau Mutual Auto Insurance Company of Columbus Ohio,—an organization es-

tablished by the Ohio Farm Bureau Federation. Through this contract we will be able to offer to our farmers complete protection in the various classes covering fire and theft, property damage, public liability and collision. The rates are very attractive, showing savings approaching 50% of present conference rates. They are based upon experience that has been secured in other states already. We feel that we will be rendering quite an assistance to our farmers this coming year with this new service. Likewise, the agency should bring some revenues to the Farm Bureau Treasury, both state and county.

Taxation

One of the problems facing farmers and land owners is the mounting tax assessments and tax rates. Also the inequality in assessments between town and city property and rural, farm property.

For instance, in Kent County figures have shown that farm properties were assessed on an average at 79 per cent. of sale value and town properties in that same county at 55 per cent. of sale value. In some cases, even thought the rate has been reduced, the increased assessments have made the amount "in the lower right hand corner of the tax bill" greater than ever before.

Baltimore City pays about 65% of the tax revenues received by the state government and receives back about 26% for roads or streets and schools. Many of the counties receive more dollars back from state aid than they pay into the state treasury. Hence in the main, the job for each county is to turn the searchlight on its county and town assessments and the way the money is budgeted and expended locally.

The state Farm Bureaus of Illinois and Indiana have saved their farmers millions of dollars through their taxation studies and in the equalization of assessments.

With a large membership and resulting larger financial budget, they have been able to establish tax departments headed by capable experts and manned with sufficient assistants to enable them to dig out the facts and call for a correction of conditions.

Our own budget will not permit us to undertake such work. I am confident that we could demonstrate and secure large results from such work. Give us more members and the resulting increase in income and we could tackle the job.

Farm Bureau Day at Timonium

Wednesday, September 7th, 1927, was again designated by the Timonium Fair officials as Farm Bureau Day. The officers and Board of Directors of the Federation were the guests of the Fair Association. A large number of Farm Bureau folks were in attendance and visited the tent used as the Farm Bureau headquarters. Adjoining this headquarters tent, the women of the Baltimore County Farm Bureau had a tent wherein meals and dairy products were sold.

In addition to our people taking in the various exhibits of live stock, farm machinery, etc., the amusement side was furnished by our annual horseshoe pitching contest, the hog calling contest and a rolling pin throwing contest for the women.

Mid-West Farm Bureau Training School

Your Secretary attended at Cedar Lake, Indiana, during the week of August 15th, a training school of Farm Bureau officials and workers. Problems of organization, membership getting and maintenance were particularly stressed. The school was very helpful.

On my return trip home, I visited the offices of the American Farm Bureau and the state Federation offices in Illinois, Indiana, and Ohio. I was able to study their methods, and make contacts that were very valuable.

Meetings

Your Secretary has attended meetings throughout the state and wherever it was possible has responded to every request to attend any meeting, conference or other gathering. At practically all these meetings he has been requested to tell of the activities of the Farm Bureau or to talk on the subject under discussion at the conference.

Lack of available funds has necessarily curtailed some of this type of travel.

Importance of Locals

The very life of the Farm Bureau organization depends upon the community locals. And the life of a local depends upon its leadership.

Capable leaders,—ones who put clear thinking and planning into the work,—will usually have interesting meetings, and a good turnout of members.

The greatest fault I have noticed in regard to locals, is that some local leaders make no plans ahead. No arrangements are made for a comfortable, well lighted, attractive meeting place. Possibly they come to the meeting or do not. Then they wonder why members don't come out.

On the other hand, many members, by their lack of interest and general apathy dishearten the leaders. This whole problem is one of coöperation. I trust both local leaders and members will "buck up" and put more constructive thinking and "pep" into their 1928 meetings. The success of our entire organization depends on it.

Programs of Work

When we first started our organization, in its various subdivisions, had definite objectives as outlined in their programs of work. They were headed somewhere,—they had a destination.

This past year found many of the county and local units without such a chart.

May I not plead with all of you to get back to first principles, and remember that no building or road or automobile was ever built until there was first some dreaming, having a vision and then planning the thing out definitely in advance.

Dreams or plans don't come true of their own accord. It will take the "everlasting team work of every blooming soul" to make the dream and plan a reality.

Leadership Bulletin

In order to stimulate our county and local leaders in holding better and more regular local meetings, your Sec-

retary inaugurated a special monthly mimeographed bulletin, known as the "Maryland Farm Bureau Leadership" bulletin.

Even in the few months it has been issued, I have noticed an increase of the number of local meetings and a general improvement in morale. Local leaders have expressed to me personally their appreciation for the bulletin and the benefit it has been to them.

New Plan for Organization of Farm Bureau Locals

Recently I passed on to our Board of Directors a plan that had been suggested for the organization of our locals. This plan suggested that all locals be erected on a commodity basis rather than a community basis.

Our agriculture as far as individual farmers are concerned is becoming greatly specialized. Likewise, our communities are becoming very completely organized. There is a special organization for every community activity, especially in our schools and churches.

Many of the problems that would usually fall to the lot of a Farm Bureau local, are now being handled by these specialized community organizations. Likewise, in drafting the program of work for a Farm Bureau community local, it is necessary to cover such a range of subjects in order to meet the diversified interests of the members. It is possible that in a community local, there will be only one or two men interested in fruit production. A meeting of the local held to discuss fruit problems would only be of interest to these two members. The others either come out of courtesy or loyalty to their local, and are bored perhaps by the discussion that takes place, or else stay away, which is also harmful to the meeting. The new suggested plan is that the locals be organized on a commodity basis, that there be a fruit local in the county to which all fruit growers will be affiliated, the number of meetings and the places in which these meetings would be held, would depend, of course, on the number of members affiliated with that local and interested in the subjects to be discussed. The same would apply to other commodities. I believe that if we are ever to

make an advance along coöperative marketing lines, it is going to be necessary that we first get the producers of a commodity segregated so that they can sufficiently discuss and consider their problems before they can make the step toward marketing coöperatively that commodity.

Under such a plan as is suggested, the one $10.00 dues to the Farm Bureau would finance the farmer's membership in the commodity local in the County, in the County Farm Bureau, in the State Commodity group, in the State Farm Bureau, and in the National Farm Bureau, as well as pay his subscription to the Bureau Farmer. Under such a plan, for instance, there would be a fruit local in each county, these fruit growers to be automatically members of the State Horticultural Society. The County Farm Bureau would serve as the General Service or tie-in organization for all the various commodity groups within the county. The State Farm Bureau would serve as the general service or tie-in organization of all state commodity groups. This is a matter that I believe is worthy of the consideration of all members and of all the various commodity groups connected with the Farm Bureau Federation and of all the other agricultural forces in the state of Maryland.

Finances

Without discussing any more subjects which could be brought out in an annual report such as this, may we take up the matter of finances. One year ago this Federation had remaining a balance of a debt it had carried over from the beginning of the year. I am glad to report that the Federation is now out of debt, has paid its various obligations and is in a position to go forward in 1928 with the possibility of doing some real constructive work. I do not want you to infer from this statement, that the organization will have plenty of money in 1928 with which to function. It has been one of the problems right along to meet the demands made upon us with the limited budget which we have had. There has been a shrinkage in membership which no one is trying to hide and which has greatly curtailed our income. We are hopeful that the year 1928 will see a

rebuilding of some of this membership and that we may also get some revenue from our automobile insurance project.

We are hopeful that the revenue from these two sources will permit us to carry on our state office work without any further curtailment of our activities. We have tried in every way to hold expenses down to the very minimum and to spend no money unless it were available. In other words, we would not go in debt for any project.

We have had our troubles for some years in trying to keep a close tie-up with the members in various counties, especially in membership accounting and in keeping track of membership expirations. We have succeeded in working out this year, a new system which we believe will be a great assistance along this line, and which will also reduce clerical labor of the county groups to a minimum.

A real challenge exists, however, to our leaders in the various counties and in the various commodity associations and to our extension workers. There has got to be a more unified action on the part of these leaders and workers to go out and interest our farmers in general farm organization, if we are to continue to function as such an organization. There must be, beginning with the year 1928, an upbuilding of membership and of finances if the organization is to stay in the field and operate even as at present.

Our statement of income and disbursements for the year 1927 is as follows:

Statement for period from January 1, 1927 to December 31, 1927

RECEIPTS:

County dues collected	$11,196.00
From annual banquet 1926	777.59
Interst earned	19.56
Publicity advertising	654.56
Farm Bureau organization refund	155.80
Bond expense refund	30.50
Coöperative purchases refund	15.00
Wool marketing organization refund	33.77
Office expense refund	14.80
Telephone, telegraph and rent	33.63
Traveling expense	269.44
Total income for period	$13,200.56
Bank balance January 1, 1927	191.34
Available cash	$13,391.90

DISBURSEMENTS:

Dues American Farm Bureau Federation	$1,415.25	
Executive committee expense	18.90	
Board of directors' expense	362.92	
Furniture and fixtures purchased	75.00	
Farm Bureau organization expense	349.92	
Bonding expense	64.00	
Annual meeting expense 1926	748.47	
" " " 1927	97.50	
Coöperative purchases	15.00	
Legislative expense	166.82	
Publicity expense	969.86	
Salary sect'y, treas. (other salary from Agri. Corp. of Md.	3,000.00	
Salary clerk	1,495.00	
Salary Publicity	420.00	
Salary accountant	220.00	
Wool marketing expense	92.60	
Nine county campaign	150.90	
Farm Bureau movie	24.00	
Office expense	627.27	
Telephone, telegraph and rent	931.98	
Traveling expense	406.66	
Note paid	1,500.00	
Interest on note	21.67	
Total disbursements		$13,173.72
Bank balance December 31, 1927		$218.18

All of our funds are derived from membership dues and some little advertising receipts. None from coöperative purchasing or marketing.

May I again express my appreciation for the many courtesies extended to me by you throughout the state and may I ask that you continue to show the same willingness to assist and aid in the future, whether the present administration continues in charge of the state Farm Bureau or whether you put other pilots at the helm.

REPORT ON STATE APPROPRIATION

The following is a financial statement of the State appropriation made to the Maryland Agricultural Society—Maryland Farm Bureau Federation, approved by the Council and submitted by the treasurer, Dr. T. B. Symons:

MARYLAND AGRICULTURAL SOCIETY—MARYLAND FARM BUREAU FEDERATION
FINANCIAL STATEMENT FOR FISCAL YEAR 1926-1927

Check	Payee	Classification	Amount Expended
225	Union Trust Co.	Office rent (October)	$52.92
226	R. F. McHenry	Community Ex. (Allegany)	50.00
227	W. C. Jester	Community Ex. (Garrett)	50.00
228	Benjamin B. Jones	Travel (Directors' meeting)	5.55
229	Hattie E. Brooks	Community Ex. (Dorchester)	25.00
230	Carlyle Martin	Community Ex. (Prince George's)	18.00
231	Mr. Connick, Principal	Community Ex. (Prince George's)	20.00
232	Miss Irene Martin, secretary	Community Ex. (Washington)	25.00
233	Union Trust Co.	Office rent (November)	52.92
234	Evelyn Young	Community Ex. (Calvert)	50.00
235	M. H. Fairbank	Community Ex. (Howard)	50.00
236	Union Trust Co.	Office rent (December)	52.92
237	Ernest W. Grubb	Community Ex. (Queen Anne's)	50.00
238	Bessie M. Spafford	Community Ex. (Caroline)	50.00
239	L. H. Martin	Community Ex. (Colored)	50.00
240	J. F. Armstrong	Community Ex. (Colored)	25.00
241	M. M. Stewart	Travel (Chicago A. F. B. Annual Meeting)	80.97
242	Olive K. Walls	Community Ex. (Talbot)	50.00
243	Union Trust Co.	Office rent (January)	52.92
244	Maryland Crop Improvement Assn.	Community Ex. (Corn Show, Baltimore)	88.00
245	K. A. Keithly	Travel (Sheep Growers, Baltimore)	19.23
246	W. B. Nissley	Travel (Vegetable Growers, Baltimore)	19.35
247	H. H. Havner	Travel (Swine Growers, Baltimore)	31.55
248	Maryland Crop Improvement Assn.	Community Ex. (Corn Show, Baltimore)	148.00
249	L. B. Palmer	Travel (Annual Meeting, Baltimore)	54.32
250	Benjamin F. Creech	Travel (Beef Cattle meeting, Baltimore)	41.67

MARYLAND AGRICULTURAL SOCIETY—MARYLAND FARM BUREAU FEDERATION
FINANCIAL STATEMENT FOR FISCAL YEAR 1926-1927

Check	Payee	Classification	Amount Expended
251	H. B. Wells	Travel (Annual Meeting, Baltimore)	117.08
252	The Alcazar	Travel (Annual Meeting, Baltimore)	100.00
253	Lewis M. Lambert	Suppplies (Signs for Annual Meeting)	18.80
254	Hyatt Mfg. Co.	Supplies (Badges for Annual Meeting)	54.95
255	E. C. Auchter	Travel (Annual Meeting, Baltimore)	24.84
256	Fred W. Geise	Travel (Annual Meeting, Baltimore)	9.87
257	E. W. Stillwell	Travel (Annual Meeting, Baltimore)	3.69
258	E. R. Root	Travel (Annual Meeting, Baltimore)	37.50
259	J. F. Armstrong	Community Ex. (Colored)	25.00
260	Union Trust Co.	Office rent (February)	52.92
261	Union Trust Co.	Office rent (March)	52.92
262	Benjamin B. Jones	Travel (Directors' Meeting)	8.73
263	Henry C. Whiteford	Travel (Farm Bureau Meeting, Baltimore)	7.52
264	R. A. Potts	Printing (Reporting Annual Meeting)	99.89
265	Georgiana Linthicum	Community Ex. (Anne Arundel)	50.00
266	Union Trust Co.	Office rent (April)	52.92
267	Rexford L. Holmes	Printing (Reporting Annual Meeting)	109.82
268	Union Trust Co.	Office rent (May)	52.92
269	Thomas B. Symons	Travel (Executive Committee)	10.00
270	Union Trust Co.	Office rent (June)	52.92
271	Henry C. Whiteford	Travel (Farm Bureau Meeting, Baltimore)	7.67
272	Rexford L. Holmes	Printing (Reporting Annual Meeting)	42.50
273	Union Trust Co.	Office rent (July)	52.92
274	M. T. Bowdoin	Communication (Postage)	50.00
275	B. & O. Railroad Co.	Communication (Freight, Annual Report)	4.06
276	University of Maryland Press	Supplies (Envelopes for Annual Reports)	16.00

MARYLAND AGRICULTURAL SOCIETY—MARYLAND FARM BUREAU FEDERATION
FINANCIAL STATEMENT FOR FISCAL YEAR 1926-1927

Check	Payee	Classification	Amount Expended
277	George R. Stuntz	Community Ex. (Charles)	50.00
278	Maryland Farm Bureau Federation	Communication (Postage)	12.00
279	B. & O. Railroad Co.	Communication (Freight, Reports)	1.11
280	Union Trust Co.	Office rent (August)	52.92
281	M. M. Stewart	Travel (Spec. Committee, Farm Org.)	14.00
282	C. & P. Tel. Co.	Communication (Telephone)	50.00
283	Elsie Geis	Other Exp. (Labor, Annual Report)	15.00
284	M. M. Stewart	Other Exp. (Labor, Annual Report)	75.00
285	T. B. Symons	Other Exp. (Labor, Annual Report)	60.00
286	K. G. Connolly	Other Exp. (Labor, Annual Report and accounts)	50.00
287	M. D. Bowers	Other Exp. (Labor, Annual Report)	10.00
288	M. M. Stewart	Travel (Mid-West F. B. training school, Ind.)	85.00
289	Union Trust Co.	Office rent (September)	52.92
290	Maryland Farm Bureau Federation	Office rent (Pt. payment)	4.96
291	William R. McKnight	Community Ex. (Dorchester)	25.00
292	Ethel Joy	Community Ex. (St. Mary's)	50.00
293	H. R. Shoemaker	Community Ex. (Frederick)	50.00
294	M. T. Bowdoin	Communication (Postage)	32.83
295	Model Printing Co.	Printing (Horticultural programs)	20.00
296	University of Maryland Press	Supplies (Envelopes)	4.75
297	E. G. Jenkins	Supplies (Calf club signs)	13.00
298	Lewis M. Lambert	Supplies (Signs)	5.00
299	Baltimore Photo-Print Co.	Travel (Exp. for prints)	3.85
300	George D. Quigley	Travel (Taneytown)	14.87
301	Fred W. Geise	Travel (Indian Head)	8.48
302	J. E. Metzger	Travel (Taneytown)	12.22

MARYLAND AGRICULTURAL SOCIETY—MARYLAND FARM BUREAU FEDERATION
FINANCIAL STATEMENT FOR FISCAL YEAR 1926-1927

Check	Payee	Classification	Amount Expended
303	J. P. Brown	Community Ex. (Wicomico)	50.00
304	H. M. Hyatt Co.	Supplies (Badges, Timonium)	5.60
305	Extension Service, Univ. of Md.	Supplies (Stencils, etc.)	34.38
306	Albert White	Travel (Ridgely)	17.05
307	Albert White	Travel (Ridgely)	7.60
308	E. C. Auchter	Travel (Salisbury)	20.17
309	Hotel Rennert Co.	Travel (Luncheons, Directors)	13.95
310	Thomas Roy Brookes	Travel (Dorchester)	52.43
311	Thomas Roy Brookes	Travel (Dorchester and Kent)	53.45
312	Maryland Farm Bureau Federation	Travel (Meetings, 4 parties)	45.58
313	Maryland Farm Bureau Federation	Travel (Meetings, J. W. Jones)	58.28
414	M. M. Stewart	Travel (Meetings)	56.42
315	B. & O. Railroad Co.	Travel (T. B. Symons)	30.00
316	M. M. Stewart	Travel (Meetings)	53.84
317	M. M. Stewart	Travel (Meetings)	55.32
318	Maryland Farm Bureau Federation	Travel (Meals, Ex. Com., etc.)	12.56
319	T. H. Bartilson	Community Ex. (Cecil)	50.00
320	O. W. Anderson	Community Ex. (Montgomery)	51.00
321	Dorothy Emerson	Community Ex. (Girls)	50.00
Total expenditures to October 1, 1927, paid by Treasurer			3,819.30

Paid direct by Comptroller's Office for unexempted expenditures:		
Thomas & Evans Printing Co.—10,000 programs for annual meeting	$ 103.72	
Thomas & Evans Printing Co.—Annual Reports, bound copies and separates	1,029.46	
Baxter Paper Co., Inc.—Paper	47.52	
Total paid direct by Comptroller's Office for unexempted expenditures		$1,180.70
Total paid by Treasurer for expenditures		3,819.30
Grand total of expenditures—October 1, 1926—October 1, 1927		$5,000.00
Total appropriation		5,000.00

PRESIDENT DAVIS: We have with us Mr. Depew Head, Director of Organization of the Ohio Farm Bureau Federation, and I want to say that from what I have seen of those Ohio fellows they are real live wires. I know you will enjoy his address. (Applause).

ADDRESS

BY DEPEW HEAD,
Ohio Farm Bureau Federation.

Mr. Chairman and Farm Bureau Folks in Maryland:

I don't blame you at all. I know just how you feel—"Here comes another of those long-winded speeches." I don't blame you for going home. I'm glad you stood up to have a little sing, because I don't want you to go to sleep while I am talking because I am afraid you might snore, and besides, I like to sleep alone.

My friend, the Master of the State Grange, said he didn't know what to talk about and I thought he was going to tell the story of the fellow who said he didn't know what to talk about, and a little boy in the front row said, "About three minutes, and then sit down!" I know that's the way you feel, you Maryland folks.

I want to say to you that I am very much appreciative of the spirit in which I think I might say you have "taken me in." Your Mr. Davis, whom I have known for some time, your Mr. Stewart, whom I have been acquainted with for several years, Mr. Harvey of your Fair, where I have exhibited those lonesome hogs of mine, and Mr. Carmichael—I have felt pretty much at home with the Maryland folks. I am very much appreciative of it. I don't feel that I have been "taken in" to the extent that a lady was who came into a store and wanted to buy one of those fluffy, breezy kind of coats. So she came into the store with her head up in the air and the clerk showed here a coat at $50.00.

She said, "Oh, no, I don't want that," but she liked it just the same.

The clerk dug around and found another coat of the same price and class but a different shade. She liked it fine and asked how much it was, and he said it was $75.00. She took it.

A preacher was standing by and he said to the clerk, "Young man, can you justify that in the Scriptures?"

The clerk said, "Yes indeed, 'she was a stranger and I took her in!' " (Laughter).

So I have been taken in better than that, except that I notice you like the ladies over in this part of the country better than you do the men. A photographer from the Baltimore News came around and wanted to take some pictures. Mr. Stewart and I wanted him to take ours, but no, he wanted pictures of ladies. But the Sun came along and took us in.

When I was asked by your Mr. Stewart, out at the Mid-West Training School, to come to you and discuss this subject, "Organization Consciousness," Mr. Stewart said, "Head, I want you to just get up and present this discussion as you did out here. I don't want you to be all fussy about it and make a fine speech. Just be natural." I am sure that when I am finished you will agree with me that I have lived up to at least his requirement that I haven't made a speech! It is going to be a discussion. I said to Mr. Cockey, the President of the Baltimore County Farm Bureau, when he made some reference to a speech, "We are just going to lead in discussion."

He said, "Look out, don't let these Maryland farmers get you into an argument." I told him I wouldn't. Some one told me recently that discussion exercised the brain and argument only exercised the tongue! This is going to be a discussion.

Now, folks, I'd rather talk to you about our Farm Bureau over in Ohio, its program, its activities than anything else. I think we have a wonderful program of work over there, but I am not delegated to do that. I am delegated to talk to you on just one phase of our Farm Bureau, that phase of the work that I am directly engaged in, the organization work.

This organization consciousness, what is it, where, when, and why? I am not sure I know. Organization consciousness—what is it? Webster tells us that consciousness is a knowledge of a sensation. The psychologist James, tells us

that it is a stream, because it flows; but for practical purposes I choose to call it a feeling of appreciation, because feeling is the hidden controller of our lives. Feeling, almost entirely without our knowledge, determines our preferences, regulates our decisions, causes our actions; reason has but a small part to play in it. It is only used to justify to ourselves and to others why we do certain things that are inherently instinctive in us.

Organization consciousness—who is it? If I may dare use it in the personal, why, it's you; it is you Farm Bureau leaders, you who have made sacrifices; it is the leadership in your county Farm Bureaus; it is your membership—it is all of you.

When is it? It is when you are your better selves. It is when the best in you comes out. It is when an appeal is made to the better things in men and women.

Where is it? May I answer that in the negative. It is not in your pocketbook, and it is not in the pocketbook of your members nor your prospective members. It is not in the income that is derived for the services that are rendered by your coöperatives. But rather, I say folks, it is in you; it is in most of your members who have stood loyal, that loyalty being based on information about your Farm Bureau; the loyalty of those whom you represent here today.

Why is it? Because first, you have got it. It is in you; because you live it; because you teach it; because you believe you need it in your organization; because it is the very integral part of your Farm Bureau; because our most bitter enemies, our foes, those who are seeking to deprive the farmers of the privilege of doing the two things they have got to do—to reduce their overhead cost of operating their farms, to increase their incomes to those farms—so I repeat, our most bitter foes, those who are opposing our opportunity, as your Governor said, to better help ourselves, those enemies know that this something intangible that we are trying to discuss is the only blooming thing that we have got that they haven't got. With their money, their salesmanship, their business experience and sagacity, the capital invested, with the reserves that they have got—when we endeavor in

an organized way to benefit agriculture I maintain that this something that I am talking about is the only thing that we farm folks have got that the other fellows haven't, and without it, we will not succeed.

Are you, in your Farm Bureau organization, State and County, going to allow organization consciousness to get to work and continue to work in your organization at home, or are you, perhaps interested in some particular phase of your Farm Bureau or coöperative work, going to fail to realize the part that appreciation plays in the particular work or services that you are rendering? Are you going to fail to teach that doctrine to the farmer who is working with you, an appreciation of how and why he is getting the services that your Farm Bureau is rendering?

In our training schools in farm bureau organization work, we have adopted some certain principles, three or four of which I want to read to you:—

First, that a permanent membership is paramount in the Farm Bureau if it is to function in an educational, a social, and economic capacity, and that the Farm Bureau,—County, State, and National, must build its program, its personnel, and its budget with membership the primary consideration.

Second, that a membership policy must be built on an appeal of an adequate standard of living on the farm, and an income to maintain it.

Third, that to have a healthy and a permanent farm organization, farm leaders must have the courage to teach every American farmer that he owes to the community and to his occupation a decent contribution of money and effort and time! (Applause).

Fourth, that the future of coöperative marketing and coöperative purchasing can only be assured through appreciation by the farmer; that such activities are only factors that make possible this adequate standard of living, and that he must recognize and appreciate the necessity of loyalty to and understanding of these fundamentals rather than a consideration of only direct monetary returns.

From our recent training school for Farm Bureaus we have adopted this one outstanding principle—that the devel-

opment of Farm Bureau consciousness is essential to membership maintenance. Are you Farm Bureau leaders going to forget the necessity of developing organization consciousness? Over in Ohio we did to an extent. We said a while ago, we'd rather talk to you about our program of work, our activities in our organization. We would. We have got a wonderful organization, and I am proud to be identified with it. Our Farm Bureau in Ohio is largely economic; but it is working, at least, it has been working.

The Farm Bureau and Extension Service are very closely related, and the extension program is working very satisfactorily. Let's see briefly what this program is: When we had 50,000 or 60,000 members, Dean Vivian, of the College of Agriculture made this statement, "Our Extension Service was the envy of the surrounding states." We are told by folks outside of the State of Ohio that our live stock marketing program is second to none, one of the outstanding marketing programs of the country. We are marketing annually around $15,000,000. worth of live stock through our coöperative channels. Our wool pool this past year with 3,500,000 pounds is one of the outstanding of the country, and other states are using that pool. We have a very successful fertilizer business and volume. More than a half million dollars in patronage savings have been sent back to members of our Farm Bureaus in the last four and a half years on fertilizer alone.

Automobile insurance, operating now only about twenty months, boasts 20,000 policy holders. Our grain department serves over 100 coöperative elevators in our state. Our Legal, Publicity, and Transportation Departments serve 75,000 farmers in our various coöperatives.

Now, folks, I haven't mentioned that program of ours entirely to be boastful, but rather to draw some very pointed conclusions that I want you to take home in your own Farm Bureau organization work. I want you to go back with me for a moment now. This work was all started about eight years ago when we had 75,000 members in our Ohio Farm Bureau who paid their first year's dues in our Association. While we were spending $1,200,000, from membership dues, giving services to those 75,000 paid up members in answer

to the demands of those organized groups in every county in our State, while we were rendering that service, building the service that I have just gone over hurriedly, and spending $1,200,000 giving it, listen, our membership slipped to 60,000, 50,000, 40,000, 30,000, 25,000, 20,000, and down to 18,000 paid up members in the Farm Bureau! While we were spending $1,200,000 giving them services, with terrible results and causes.

Were we selling the Farm Bureau during those years? No! We were simply demonstrating the possibility of organization; but we were not selling appreciation. We were not selling organization consciousness. It may be interesting to note, to you folks, that we failed to sell appreciation, and failed to build favorable public opinion so that we might maintain our county agents in our educational extension work. Today we find ourselves without county agents in some 12 or 15 counties for that very reason, which I think is deplorable.

Now listen, we market annually in Ohio about $130,000,000. worth of live stock, yet, coöperatively, as good as that program is, we are only marketing $15,000,000. worth. We have 14,000,000 pounds of wool in Ohio, and our best in the pool has been 4,000,000 pounds. I told you of the thousands of dollars we saved in coöperative purchasing; but we only handled 14 per cent. of the fertilizer business of Ohio. If all of this is so good, and our program is so wonderful, why is it not translated into membership by appreciation of those folks to whom those services are rendered? Oh, the answer is easy—because we haven't been selling it that way.

The membership in the Farm Bureau is running right along with the volume of the business we are doing, and as good as that program is we can't get out any bigger volume in wool or live stock or purchasing, and we won't until we increase the membership in the organization. We have got to sell organization first. We didn't. We sold services first, and at one time even discontinued (I am ashamed to tell you that I sat on the Executive Committee of our State Board when we discontiued an organization department because we didn't need it).

Our slogan at that time (and I can still see it on the blackboard in great big letters in our assembly room) was "Membership through Service." But it didn't work. Lucius Wilson, of the General Organization Company, came along and knocked that into a cocked hat, and now we are talking "Service through Membership," and since then we have been able to materially increase the membership in our organization by several thousand members.

In the words of that Great Teacher "He who has eyes to see, let him see," but we sometimes don't see. We refuse to see. We just go on attacking the line of least resistance. It is easier to give a farmer service through his organization than it is to teach him that he has got to serve his organization. (Applause). We set up a new project, and we give it to them.

I'd like to say something about automobile insurance, but I won't.

May I use a couple of illustrations to attempt to prove to you some of the points I have raised with you, because I shall try not to leave you in doubt. This past September I was working in two or three Eastern Ohio Counties along with membership campaigns with our Service Managers; the boys doing the service work in our counties were working on the fertilizer campaign. We rather felt that the old line interests about had us licked, in fact, we had been slipping the past three or four years in our volume. We put on an intensive campaign, telling the farmers of our state about coöperative purchasing of fertilizer.

I went one afternoon, with one of our service managers, trying to sell goods to the farmers on our prospect list down a certain road. The price in that territory was $27.20 a ton. Under our coöperative plan it is, "Come to the car door, boys, and get your fertilizer. You have got two days to unload it, and you pay cash at the door for it." It is on that basis that we build up our business.

Just across the road in another yard was an old line fertilizer salesman, selling 20 per cent acid goods just as good as ours for $25.00 a ton, delivered out to your barn door with thirty days to pay for it. Did we sell any fertilizer that day at $27.20 a ton, come to the car and get it and pay cash?

You will pardon the personal reference when I say to you, yes, we did, we sold a whole carload of it. But no, we did not sell a carload of fertilizer, we sold a carload of consciousness. We sold an appreciation of the fact that that organization brought that bird across the road down to that territory with the services that he had to offer at $25.00 a ton delivered.

But folks, the unfortunate part about that little episode was, last year we shipped three carloads of fertilizer into that territory and down that road, and this year, only one.

One of our strong counties in Ohio, it is called Pickaway County, 2 years ago had a membership of 719 who paid their $10.00 dues into the Pickaway County Farm Bureau in 1925. In January, 1926, the Annual Meeting of that Farm Bureau was held and on that day $14,000. were distributed in patronage dividends to the 719 Farm Bureau members in that county from the services that were rendered by that County Farm Bureau, more than twice as many dollars as were paid into that Farm Bureau in membership. Follow me, if you will, to the Treasury of that Farm Bureau in September, 1926, eight months after those dues were again due and payable, and only six months after $2.00 had been sent back for every $1.00 that was paid in the year before, and how many members do you suppose in September had paid their dues into the Pickaway County Farm Bureau? How many of the 719 had paid their dues, do you imagine? Only 175, and yet, they had received $2.00 for $1.00, don't forget.

We were changing from the old three year contract to the continuous membership agreement. The Farm Bureau Board of Directors decided to send out continuous membership agreements to those folks who had had splendid service rendered them, and we knew they'd be appreciative of that Farm Bureau. We sent this Farm Bureau the membership agreements, but we didn't send it to the 719; we only sent it to the 175 who paid their dues. How many do you suppose sent back the continuous membership agreement signed up? Thirty-eight!

Last spring we were in another section of our State—I am using these illustrations to show it is no different in

my county than in others, and it is no different in Maryland than it is in Ohio—in Northeastern Ohio, and I was working on a membership campaign. We were out trying to get a team worker to go into a volunteer membership campaign to solicit his neighbors. The lady at the house told us where we might find Mr. Gleason, for whom we had inquired. Down the lane we went into the fields to find Mr. Gleason. We headed the nose of the old Ford into the field where he was, and just as we got down in there, whoa, we saw Mr. Gleason up on a great, big flat-top wagon with a shovel and a great big wooden maul. He was pounding out caked fertilizer that had been shipped to him through his Farm Bureau, and I wanted to get him for a teamworker in that Farm Bureau!

Well, we were there. We couldn't back out. We had to go into it. A salesman told me one time, "Whenever you are out on a sales proposition, get right to your subject. Don't start fooling away lots of time talking about something else."

I did. I went right to the job of getting Mr. Gleason to be one of our team-workers in our campaign. Say, we got him, too. But that fertilizer had to come up! When we told him the date of the team school when we wanted him to be there, something was said about this fertilizer. He was sitting on the wagon talking to us, and all the time he was down on his knees pounding on that fertilizer. When the fertilizer was mentioned he looked around at it, he looked at us, and would you believe, he smiled! Yes, sir, he smiled, and he looked at it again, and he smiled again, and he said "My Farm Bureau brought me that stuff."

Did he have it? Yep, he had it—organization consicousness. Some of us call it loyalty, loyalty based on knowledge and information, and he knew that we would have, oh, a lot more sacks of caked fertilizer and like troubles before we'd got through with this job.

Some times, folks, I think we have got to organize our own thinking before we organize anything else. Your own attitude toward your organization must be right, and the right attitude lifts you up in your own estimation as well as in the estimation of your friends. The prestige of agriculture

can be strengthened because your attitude is right; it has been so strengthened.

Friends, for what are we working in this Farm Bureau movement? Isn't it home, and those loved ones about us? Isn't it happiness, and privileges, and pleasures for them? Shouldn't we develop organization consciousness? Haven't we got an objective, an adequate standard of living on the farm, and a fair income to maintain it? How? Why, through an active, an informed, and a loyal membership in a permanent organization based on the needs and the wishes and the ability of farm folks to get the job done.

I am mindful of the words of Theodore Roosevelt, "I warn my countrymen that the great recent progress made in city life is not a full measure of civilization, for our civilization rests at the bottom on the wholesomeness, the attractiveness, and the completeness, as well as the prosperity of life out in the country." Then should we be seeking that objective, a better standard of living? Can we get it through organization? Yes. Can we develop organization consciousness? I believe we can. Have we the courage to teach the American farmer, may I say, the Maryland farmer, that he owes to his organization, to his occupation, to the community in which he lives, a decent contribution of time, and effort, and money? Is it a question of money, a question of dues? I do not believe it is.

Will you picture with me for a moment in an agricultural section in Maryland a prosperous community. Can you close your eyes with me and see out there, snugly tucked among the hills, a community, a thriving business, a school paid for by your own taxes, a church supported by that community. Down the road you can see that homestead, that farm with its investment, investment of money to support that school, that church, the equipment on that farm. Can you see with me the loved ones in that home, those children primarily for whom that farmer is working? Can you think of what it is worth to the farmer in that home to have protection through some form of organization? Carry the thought of that investment, if you will, with me back again to Ohio, to Trumbull County, a county where last spring we held an

all day training school of volunteer workers, membership workers who had come in for training, to go out the next day to sell memberships to their neighbors.

It was a cold, damp, dark, rainy, sleety, slushy, mushy day. There was a man in that room, a member of the Board of Directors, who wanted $5.00 dues in his Farm Bureau instead of $10.00. He followed us downstairs to the Farm Bureau office to discuss $5.00 dues. While we were discussing it a little newsboy ran through the courthouse hall with his cheery, piping, little voice calling, "Newspapers, papers!"

We called him into the office to buy one of his papers. I said, "Sonny, have you got a newsboys' organization?"

"Yep!"

"Do you belong to it?"

"You bet!"

Folks, I have worked in every county in Ohio. I have done some form of organization or coöperative work in six or eight of our states, and I have yet to hear the farmer in any organization in any community with the vim, the vigor, and the loyalty say, "Yep," and "You bet," like that little urchin did. I can see that little scamp yet on that cold, dark day with his little old red sweater which was perhaps handed down by his bigger brother, hanging down all frayed at the bottom, with his elbows through, and the rubber in his little old trousers was worn out and they were hanging down over his stockings, which were holey, and his little old shoes just soaking wet, and I could see his little dirty toes sticking through the hole in one of those shoes. I thought of that youngster perhaps working for a widowed mother to help her support the family. I thought of his investment, nothing at all but his little button and the spirit that was in him, and the determination to fight for something that he had to fight for. I said, "Sonny, how much dues do you pay in your organization?"

Like a little man, he said, "Fifteen cents a week."

Fifteen cents a week, $7.80 a year! Will you compare his investment with the investment of that farm home in the hills of Maryland? Why did that little youngster so proud-

ly say, "Yep," and "You bet," and pay his fifteen cents a week? For protection; for the privilege of selling his newspapers on two sides of the courthouse square, and none of the other boys could come in there and take that beat away from him. So you Farm Bureau folks, you coöperative folks, you educational folks, will you help us organize farm folks, organize people?

Today we have got to measure agriculture in the terms of men and women and boys and girls, and not in terms of crops. Will you help us to build a satisfied and an increasing membership so that we may develop more business for our coöperatives, more income to the farms, more favorable public opinion for agriculture's organized efforts, and then, with this, in my humble opinion, we will build better homes and better communities.

Thank you! (Applause).

PRESIDENT DAVIS: If anybody has any new business we'd like to hear it at this time. (None). Are there any resolutions you wish to offer at this time? (None). If not, we will stand adjourned until two o'clock tomorrow afternoon at the Alcazar.

THURSDAY AFTERNOON

January 5, 1928

The second session convened at two-twenty o'clock, President Davis presiding.

PRESIDENT DAVIS: The meeting will come to order. The program this afternoon calls for music. I think we have had part of that, but I think we'd like to have another song. We will sing "America."

(The audience arose and sang "America").

PRESIDENT DAVIS: The first speaker on our program this afternoon is a man that I think needs no introduction in this state. He has been here for some little time, and we certainly feel like he'd been here all his life. He is a man we love, and a man that is doing a great work among us. I will introduce Dr. Pearson, of the University of Maryland. (Applause).

ADDRESS

BY DR. R. A. PEARSON,
President of University of Maryland.

Mr. President, and Men and Women of the Farm Bureau Federation:

I am glad to greet you. I thank you for the opportunity of speaking to you, and I want to say at the very first that I feel very kindly and very grateful to the farmers of Maryland for the splendid way that they have treated me since I came to your state, now my state like yours, a little more than a year ago. It hardly seems that a year could have passed since I spoke to you at the banquet at your last Annual Meeting, and if that proves anything to me, it proves that I have been happy in my work, and the fact that I am here, safe and sound proves that I have not offended any of you beyond your power of self-control! I certainly do thank you for your kindness to me.

I am going to speak on a big subject this afternoon, perhaps one of the biggest. There are a good many "biggest" things. They are a little like the three legs of a milking stool—each one is most important, and no one can say that any one is more important than another.

Some little boys were one time arguing about what is the biggest force in all the world. One little fellow was sure that he knew. He said it was a great, fine horse that a neighbor had recently bought. Another fellow said, "Oh, Pshaw, there's nothing to that. The biggest force in all the world is a locomotive on a railroad." They discussed that for a few moments.

Then a third one said, "No, that's not the biggest force. The biggest force is a great, big greyhound that goes across the ocean thirty miles an hour. You can put a hundred locomotives right into it."

The little crowd thought that he'd gotten hold of the biggest force. Then a chap who had just begun to study botany said, "O, that's not it. The biggest force in all the world is the force that raises millions of tons of sap in plants all over the world and sends it up into the tree tops, and

into the top point of all of the blades of grass.'' No one could suggest anything greater than that.

You know the farmers are dealing with that force. It has been given to them to harness that force and to get the biggest results that they can from it. They are harnessing the sunshine, and the rain, and when I come to think of the big things that farmers are in contact with, and the things that they are trying to do, it almost appalls me, because I know of no other group of people who are dealing with such great forces.

So I am going to speak to you for just a little time this afternoon about organization. Organization has come to be recognized as necessary in almost every line of human activity. The school teachers are organized. The doctors are organized. The merchants are organized. The engineers are organized, and so on down the line. You know when it comes now to a time in our complicated civilization when some big thing has to be done, we all look to the organization of the people who are most interested and best informed about that subject to take the lead. If it is a matter of financial questions, we call on the banker. If it is a great question of public health, we call on the doctors. If the laws have to be overhauled, we call in the lawyers. And so my first point this afternoon, ladies and gentlemen, is this: If agriculture suffers, the persons who are best qualified to speak should be the farmers through their organizations, aided by the specialists who command their respect. If I had time, I'd like to tell you about what farmers' organizations have accomplished, how they saved the dairy industry of Switzerland, how they saved the swine industry of Denmark, how they saved the citrus fruit production in California, and I can come right back home here and just remind you of how the dairy business and the Baltimore milk shed has been stabilized, and how reasonable prices have been secured through the efforts of the dairymen's organization. I could make similar statements about the Maryland Tobacco Growers' Association.

The University of Maryland is strongly in favor of organization for the benefit of agriculture. Activities of the university along this line, as you all know, are directed chiefly

through our Extension Service, of which Dr. Symons is Director. What has been done through this agency particularly, through the university as a whole in coöperation with the Farm Bureau, as a state organization, and as county organizations, is so well known that I need not take it up in detail. I am assured, and I have no hesitation in voicing this assurance to you, that the attitude of the leaders of our Extension work toward the Farm Bureau is just as sympathetic as ever, and their desire to help is just as strong, and surely the officers and you good people who are here at more or less inconvenience and expense are as loyal as ever to this new organization in the field of agriculture. I am asked to tell you what the University can do to help the Farm Bureau. The short answer would be that the university will do all that it can. But the situation ought to be analyzed. It is a problem requiring just as careful considerations as any one of a dozen other problems that I might mention, for example, the soil problem. You are all accustomed to soil problems. If in a certain section of this state the soils would be found to be suffering from deterioration you'd get a lot of sympathy, but that would not help you to solve your problem, although you appreciate it. No, the chemist, and the bacteriologist, and the crop specialist, and perhaps the physicist and the geologist would be called in to supplement the efforts of the most well informed farmers who are affected. And if a cure could not be found, at least, the best course of procedure would be laid down, and all farmers would be guided by that study and those results.

I believe, Mr. President, that the problem of developing this organization needs to be studied in all its aspects, and in this study the best farmers of the state, who are interested in the organization should be supplemented by economists and specialists in organization, by experts in farm production and in marketing, and others who are best informed upon all the phases of this problem in this state and in other states. You know the problem is not peculiar to Maryland. It exists in every agricultural state. In one state that I know quite well there has been a heavy decrease in Farm Bureau members in spite of the fact that the Agricultural

Extension Service is anxious and ready to do all it can, and by the law of the state is compelled to do all that it can—yet, in that state they have experienced a heavy decrease in their membership.

In studying a proposition of this kind, there are a good many subjects that have to come up for consideration, and that might be mentioned here. But let me mention as briefly as I can the one that seems to be uppermost at the present time, and that is the agricultural situation. Our Governor made some very timely suggestions on that topic yesterday. Without doubt, this is the biggest factor, and now, after seven years of agricultural depression a little light is beginning to shine on this problem. People are beginning to realize what has happened to the farmers.

Some persons (I'd like to make this point clear, because I think it is quite fundamental in our relations with our friends in the cities) think that the great urban prosperity, prosperity in all of the cities and small cities of the country of the past few years disproves forever the old idea that agriculture is the foundation of national prosperity. They say, "How can it be that agriculture is the foundation of national prosperity when we have enjoyed more prosperity than ever before, and agriculture is in trouble all the time?"

I want to answer that question. I wish I could clear the slate. Nothing of the kind has been disproved. Agriculture is the foundation of national prosperity, and it has been far more than all other causes combined, I believe, the foundation of this wonderful prosperity that we hear so much about. How? Well, big crops on the farm always has meant a big increase in transportation and in manufacturing, and in commerce. It always has meant that, and this old idea of national prosperity being based on agricultural prosperity has depended pretty much on that statement that I just made—big crops, much transportation, much business.

During the past few years the farmers have produced the big crops and the country has prospered accordingly, almost every industry and activity having benefited. It has meant more freight cars, more trains, more equipment for the railroads, and this means more labor employed every-

where, better pay, and so on, and on this money that was created on the farms goes through the banks, and from the banks into manufacturing and into building and into business, and more and more prosperity spreads. It always has been so. It has been so these last few years by reason of the fact that the farmers have continued to produce these great crops.

But another thing has happened which has helped non-agricultural people, namely, the prices of food have been abnormally low as compared with prices of other articles, and of rents and of wages. That has not always been the rule in the past, even when we had the great, bumper crops. So the farmers of the United States (this is the sentence I have been leading up to), furnished by their large crops impetus for urban prosperity, and they have helped further by providing food at abnormally low prices. You get the double relationship?

The farmers have given our friends in the cities the materials to work with and play with, and then they have said, "And we will feed you cheap just to increase your enjoyment." That is what has happened. At least, it would seem that the farmers ought to have the credit of doing so much for the non-agricultural population, but very few people realize it.

The United States Chamber of Commerce and big business generally and leading editors throughout the country have frankly acknowledged the disadvantage under which farmers have been working by reason of their reduced income. For example, it is pointed out that before the war the farmers received about 20 per cent. of the national income. Has any one ever said that 20 per cent. of the national income was too much for the farmers? On the basis of numbers, it should be more. But recently the farmers of the nation have been receiving not 20 per cent., but less than 11 per cent. of the total national income.

What has become of the money that the farmers would have received on the old basis? Where did it go? Who got it? For the nation, it amounts to billions of dollars. Perhaps some of it has gone into the unprecedented build-

ing operations which have increased so rapidly throughout the United States that now we are told that in many of our larger cities there are literally thousands of vacant houses. Perhaps some of it has gone into the enormous increase of purchases of luxuries which is noticeable everywhere. Perhaps this money really is responsible for the bright salesman's remark that the American people are going to have three things—good clothes, a good automobile, and a good time! Undoubtedly this great sum of money has helped to swell incomes which are so evident in recent reports from the Treasury Department.

What about the situation in Maryland? We are told that in 1920 the farm population of Maryland constituted 19 per cent. of the total, but in that year the farmers of Maryland received only 7.5 per cent. of the total income of the state. We are told that our urban population was receiving $700.00 and $800.00 per year, while the Maryland farmers were receiving about $200.00 to $300.00 in the different parts of the state, and the disproportion continues. In some large agricultural sections of the United States not very many hundreds of miles from this state, the farmers' figures have been zero or less. Maryland agriculture has not suffered as badly as agriculture has suffered elsewhere.

The Maryland farmers produce an enormous quantity of food. In 1926 the total gross income of Maryland farmers was $90,000,000. With this money they paid their taxes, paid for labor, and bought all the things they needed to buy so far as they could.

What a farmer can do with his income is the principal measure of his success in farming. I have shown that for a long period the farmers' purchasing power has been below normal, and I have stated that the situation is beginning to get better, which we all know. But the extent of the farmers' disadvantage as compared with persons in other activities is very little realized by those other persons.

As a result of some calculations that have been made with a good deal of care, I am informed that the farmers of Maryland in 1926, should have received $17,000,000. more than they did receive if they were to be given the normal

purchasing power with their income. I thought somebody would faint away when I said that, because he'd think he suffered most of that $17,000,000 loss! The $90,000,000 representing a gross value of farm products in Maryland really was worth on a normal basis only $72,000,000. In five years, my friends, the Maryland farmers have suffered, or have absorbed on this same basis, comparing the present conditions with the normal conditions, just before the war, a loss of approximately $85,000,000. Figure that out for yourselves, and you will find that it runs from $300.00 to $400.00 per farm each year for five years, and when I put it on that basis, I am sure you will agree with me that the figures are moderate.

A brighter side of the picture is in the fact that the agricultural situation is improving so that now the farmer's dollar is worth 92 cents instead of 70 cents, as it was only about 4 years ago. A farmer will have no basis of complaint when his dollar, his income, has the same value as the income that is received by other industries.

Agriculture is improving slowly but steadily. Readjustments have been in progress on 6,000,000 farms in the United States. Production is getting to be better related to consumptive requirements. Farm prices are improving. In all these difficult processes the farmers have labored, and they have learned a great deal. The farmers' organizations, the agricultural colleges, and many persons in the newspaper field have helped splendidly. Many of our men in public positions realize the true inwardness of this problem, and they are giving of their talents to help. There is more good business today in farming in the United States than ever before. Farmers are thinking of local market requirements. They even are studying the situation in foreign countries, because many of them are producing for those markets.

I want you to remember that I have referred to agricultural organizations as one of the factors that is helping to bring about the improvement, and I want to emphasize that thought, because it is my second, really, in this short address—that the farmers' organizations are already playing an important part, and if there should be one in this au-

dience who questions the justification of having a farm organization with a budget of $10—, $20— or $30,000. a year, I want to meet that person in the corner and read to him again what I have said about the farmers suffering a loss in Maryland of $85,000,000. during the last five years. A little more organization would have helped to have prevented that enormous total.

One fact is becoming clear—that in the future more than ever before, the farmer who neglects business methods and who neglects to apply science to his business is going to find it more and more difficult to get along, and the farmer who best applies business methods to his farming operations and makes the best use of the scientific knowledge which is available to him, is one who will make increasingly good reports at the end of the year.

One of the reasons why agriculture is so slow in coming back to normal is that its turnover is low. Another fact that our city friends little appreciate. While the farmer is turning over his capital once, a good many business men are turning theirs over twenty times. So that in business the man who was not going to make good was likely to go down and out soon after the war was over, or he was likely soon to find himself on the road to prosperity. The farmer is slowly and laboriously climbing now upward by reason of his slow turnover. It is a fortunate thing for our nation that there is this great conservative industry and conservative people on the farms number so many, because they are a real balance wheel in national affairs.

What do the farmers of Maryland want as to this organization? Is it needed in the great process of rehabilitation and reorganization? What should be its relationship with other organizations? What does the situation in the state really call for?

I believe that any one who has even a little information on the subject appreciates the Farm Bureau and its service, and wants it to grow in usefulness. I congratulate you upon having selected as your officers and leaders, a group of men who are sincerely laboring to make this organization more useful to its members.

The University of Maryland wants to help all it can through all its agencies. Why, there isn't a school or college in the university that won't help to work out this problem, Mr. President. Even if somebody needs to have a tooth pulled, bring him down to the School of Dentistry and we will take out the tooth! If he is so sick that he can't see things straight, let our psychiatrist look him over!

But the aid really needs to come through the College of Agriculture and through the Extension Service, and the University of Maryland is anxious to see its facilities used to the utmost.

I believe in repeating that a thorough study of this problem should be made. The problem is economic; it is social, and it is practical. It has relationships to agriculture as a whole, to the individual farmer, to other organizations, and to education and to research. It is a fascinating thing to think of what might happen through the proper development of those relationships. I believe we would do well to organize a study, just as we would of the difficult soil situation, point out the facts, put appropriate facts together, and arrive at a conclusion that will appeal to the farmers of the state because of its soundness, and will help them to decide just what they would do with this organization which is so anxious to help them.

In all these considerations, let's keep the great background in mind, that agriculture in Maryland is truly a great industry. It represents an invested capital of $400,000,000., and its facilities and its opportunities are unexcelled. Few people realize that Maryland stands high in the list when compared with other states on the basis of farm investment per square mile. There are only a few that stand higher. There is one county in Maryland that stands higher than any other state on that basis. There are a number of counties in Maryland that show larger values per square mile for live stock and for crops than any of the great states that are famous throughout the nation and in other nations because of their enormous total production along these lines.

The farm population in Maryland is as capable as in any state. I tell you, the farmers deserve tremendous cred-

it for giving away the big piece of pie and keeping the little one for themselves. I guess it was a case like that when the mother asked little Johnny, if he passed the plate to little Willie with a big piece of pie on it and a little piece of pie, would he tell Willie to take the big one?

"No," said Johnny.

"Well, why not?" said his mother.

"Because it wouldn't be necessary!" Johnny said. (Laughter).

So the big piece of pie has gone elsewhere.

What does the future hold for Maryland farms? To what extent will the Farm Bureau help to determine this answer? This depends chiefly upon the Farm Bureau itself. The University of Maryland wants to help the Farm Bureau to find its greatest field of service.

Thank you! (Applause).

PRESIDENT DAVIS: Now I will introduce Senator Caraway, of Arkansas. I know the Senator will tell us a lot of things, and whether he favors the Farm Bureau idea, or the Grange idea of farm relief, we know that whichever plan he tells us about will be good. We'd like to hear from the Senator now. (Applause).

ADDRESS

HON. T. H. CARAWAY,
U. S. Senator, Arkansas.

Mr. President, Ladies, and Gentlemen:

You know it's always a little perilous for a group of honest working people to invite somebody who is a member of the Senate, because we are accustomed to doing business with rumor, and are a little shy at facts.

I think possibly the best estimate the public has of the Senate was recently expressed by a little boy in Washington. He was a member of a class in elementary Civil Government. The teacher asked, "What does Congress consist of?"

This little fellow held up his hand and said, "The Senate."

She said, "Isn't there a lower body than that?"

He said, "No ma'am!" (Laughter).

You know, your President being kind enough to introduce me and saying whatever plan I favored would be good—I think he was too kind, although I appreciate it. I rather imagine, however, that you will decide later on that you were somewhat like a lady down in my country, whose husband died. He was the meanest, the stingiest, the cruelest, the most unpopular man in all that countryside. When he died, about a dozen people went to his funeral, not to pay him any respect, but to be sure he was dead! They drafted a young preacher to say something. He had never preached a funeral sermon before, so he went to an old minister and borrowed his funeral sermon. It didn't fit the occasion at all. He started out by saying, "This audience has assembled to pay their last tribute of respect and love to this, the most gentle, and kind, and courteous, and considerate, and popular man of all our neighbors."

The widow was sitting back in the room with her little boy, and she knew something was wrong, so she said, "Johnny, you go up there and see who they've got in that coffin!" (Laughter).

When I am through, however, I hope you will be as kind to me as a lady was to another preacher down in my state. During the war we were having one of these war drives. We were trying to get you to put your money into bonds, while we kept ours for other purposes! (Laughter). A young preacher preached a very wordy sermon at one of these meetings, and when he was through a lady who wasn't as young as she had been when she was younger, went up to him and said, "Brother, there were three things about your sermon I very much enjoyed."

Like any other public speaker, he was pleased that some one should commend his efforts, and he said, "Sister, will you tell me what those three things are so I may enlarge upon them and help others?"

She said, "Certainly, Brother. In the first place, your sermon wasn't long, and I liked that. In the second place, you took up no collection, and I liked that, and in the third

place, you left no other appointment, and I liked that!" (Laughter).

In coming here to Maryland to discuss a farm problem with you, I have done so with some hesitancy. I think of all the states in the Union you have got possibly so far as your state itself is concerned, the most beautiful state. Certainly you have one of the most progressive and intelligent citizenships, and I want to take this occasion to say that I believe you have got the best government, (whether you vote the ticket or not!) (Laughter)—of any state in the Union. I believe you come nearer to getting a dollar's worth of service for a dollar's worth of taxes that you pay than any other state in this galaxy of states.

You have got fertile soil, you are accessible to all the markets—I could take a radius of 300 miles, and include in it over half the people in these United States. You are within a few hours of all the best markets. As I said a minute ago, you have a most fertile soil, but notwithstanding that fact, in this profitless era of prosperity, there is a constant migration from the farm to the city here in Maryland. You have been losing, as I now recall, about 5,000 farmers a year to the city, and in one area, one of the most fertile in this state, I went over that situation last year, and you didn't have residing in that community a single farmer under 35 years of age who was the head of a family. The younger people had gone from the farms. That migration is going on everywhere, and there is a reason for it.

Taxes on farms (I am talking about the farmers' taxes as a whole) have risen since 1914, 150 per cent., while the earning capacities of farms have only risen about 60 per cent. When you add to that situation the increased cost of production you find out that you have no net profits.

Now, I am a farmer. I am an honest shade tree farmer. I have an "echo" in a farm down in Arkansas. I used to call it an equity, but it got so faint that now we speak of our ownership down there as being "echoes." I know something of the situation. As I said a minute ago, your profits have disappeared—they have in our country, at least, because

we are in a one-crop country. We grow cotton principally—that is, the negroes grow it and the sheriff sells it! (Laughter).

The cost of production has exceeded the price at which you may sell it. In this same period from 1920 to 1926, the shrinkage in farm values was a bit over $20,000,000,000. In 1919 and 1920 you had a farm valuation of a bit over $79,000,000,000. In 1926 you had a little less than $59,000,000,000.

Social reformers, those people who have given sociology some study, say that the family of an unskilled laborer cannot maintain the proper standard of living for less than $2,200.00 a year. In 1920 up to 1926, the average earning capacity of the farmers in America per family, was a little under $750.00 a year. Figure for interest 4½ per cent. (which is about 5 per cent. cheaper than we can get it for down home) and you have reduced the farmer's family earnings to a little bit less thn $520.00. The average farm family is five. Divide $520.00 by five, and you have the average earning capacity of the farmer's family at $104.00 a year.

Now, the farmer resents that condition, and he has a right to do it, because of all the groups in America he constitutes the most important group. Nearly 30 per cent. of the American population, 29.9, are engaged in agriculture. Yet, this 29.9 per cent. of the population receives but a fraction over 10 per cent. of our national income. The 70 per cent. engaged in commerce, in industry, gets a fraction over 90 per cent. of our national income, notwithstanding the fact that the farmers of America supply a market of practically $10,000,000,000.

You furnish nearly one-half of the value of all of our exported commodities. You pay, by the way, one-fifth of the entire cost of Government, national and state, although you have but 10 per cent. of the income.

You furnish one-eighth, or did more than that, of all the tonnage that is hauled on our railroads. I believe I mentioned that you furnish a buying capacity of around $10,000,000,000. a year. You furnish employment to more

people than any other group in America. You have furnished more men to wear their country's uniform when war has come than any other group in America. More farmers have laid down their lives in defense of America's honor and America's liberty than any other group in America. Notwithstanding that fact, whenever you come and ask for your equal opportunity under the law, there is a class in America (and I am not falling out with them, though I know what they are), that tell you that you are selfish, that you are looking for class privileges, that you want Governmental favoritism. They do that notwithstanding the fact that every one of them has knocked on the Capitol door every minute since I have been a member of Congress in either House, and have gone away with large favors, not thankfully received, because they come back and complain and say they want more.

I tried to present your problem, not a great while ago, down at Houston, Texas, to the American Bankers' Association, because I had been invited, as I understood, to do so. When I got in there, the president of the American Bankers' Association looked over, after we had sat there for a half hour. There were four of us. One of the men was the former Governor of my state; one of them was the Commissioner of Agriculture of Ohio; one of them was a former Colonel in the Overseas Army, and had been Assistant Secretary of Agriculture. But he didn't know any of us, and he told us to stand up and tell who we were. We stood up and said who we were, and he said, "I believe you have come around here to talk about farm relief."

We said, "Yes."

"Well," he said, "You may have five minutes apiece, and I will hold the watch."

I said to him, "Nobody is going to try to discuss a problem that concerns vitally 30 per cent. of the American people in five minutes, and if that is all the time you want to accord us, you may have the five minutes."

A gentleman, who was President of a bank down in Atlanta, Georgia, got up and said, "I am the President and Chief Executive (he said) of a bank of $18,000,000. worth

of assets in Atlanta, Georgia, and I know the farmers' problem and I am in sympathy with it. You are now having your hearing before the American Bankers' Association."

I said, "Yes, Sir, I am getting less time to discuss this problem than you'd devote to a Negro that came in to borrow enough money to buy a mule to find out whether he could repay you with 15 per cent. interest, and you know it!" (Applause).

Here's what I am coming to. There is a constant cry going up all over this country that the farmers are seeking special privileges. They tell you that there is a Farm Bloc in the Senate. Why, there has been a Railroad Bloc ever since there has been a railroad in America. There is a Tariff Bloc in the Senate that has been there ever since they discovered that by working the Government they could make a profit. There is a bankers' group in the Senate. There is an Army group. There is a Navy group. And then there is a group of just simply politicians for anything. But nobody ever thought about its being a crime to have a group devoted to pushing certain interests until the farmers got a group. Somebody went away, I believe Moses, of New Hampshire, and said the Farm Bloc consisted of 19 lawyers and one well digger!

Whatever this group was, they seemed to think that we were an organized band of marauders, that we had no rights. It was remarkable to me; what sometimes caused me a bit more heat than was necessary was this—whoever would have thought of a man living in Pennsylvania voting for a reduction of the tariff! Why, God bless your soul, he couldn't go back home. Mr. Mellon would see that he was banished properly from the state.

Whoever heard of a man from New England that wouldn't vote for a protection on every blessed thing in New England, including its climate, and they are welcome to keep it. Whoever heard of a man representing a community where the predominating industry there was one certain thing that didn't vote for the interests of that industry! Nobody, except when you come to the farm. What's funny about it? We for two years have been trying to pass farm legislation for

farmers, and certain groups of people who ought to vote with the farmers because they have been elected by farmers, they represent agricultural communities, have voted against us for some reason that never has been satisfactory to me, and is entirely unsatisfactory to their constituents, I have recently learned, and they are going to change their vote because after all, you can say what you please, a man who holds an office has a very great attachment for it! (Laughter). And he is going to keep it if he can.

They are going to hear something just like the story they told about a man who lived down in Arkansas near my town. He was a farmer. He had gotten too poor to have a team of mules. He was hauling wood to town with a donkey and an ox. He was hauling the wood to town to get money to pay taxes, because you have always got taxes when you have nothing else. One day he was going to town with a load of wood hauled by the donkey and the ox, and the ox decided to lie down. He kicked and cussed him—you know what you'd say to an ox—but he wouldn't get up, and finally he had to take the ox out and put his own neck in the yoke and haul the wood himself with the donkey. The same thing happened the next day. He started to town with a load, and the ox did the same thing, with the same result.

That night when he came home and turned the donkey into the barn, the ox was a little uneasy, and he came up to the donkey and asked him what the old man said about him lying down on him again. The donkey said, "He didn't say anything to me."

The ox thought about that, and said, "Well, what did he say, anything at all?"

"Well," said the donkey, "he never said anything to me, but I saw him having a heart to heart talk with the butcher in town this afternoon!" (Laughter).

Now, the farmer is not a demagogue. He knows, and every intelligent man knows that Governments can't create wealth, that every dollar of created wealth must be created, and somebody's back must ache, and some body's brow must sweat for it. But the farmer knows as well as other people know that the Government can transfer wealth from one

individual to another individual, from one class to another class, from one section of a country to another section. If that were not so, how could we account for the fact that while the State of Maryland creates more wealth than the six New England States, they have got more accumulated wealth than you by ten times as much.

Well, that's what we complain about. They've farmed the Government while we have farmed our fields, and we are going to try to till a little in the field in which they found it so profitable, and they resent it very much. Every member from the New England States voted against farm relief in the House and in the Senate except one; Senator Gould was sitting over in the corner asleep, and when the roll was called he hollered "Aye." Little Jimmy Hale went over and told him he voted wrong, and he said, "Well, I don't know what it's about."

Then the President voted on the question, you know. He vetoed it.

All I want to say is this, that Mr. Coolidge has the New England viewpoint. In the West, in the South, in fact in all the agricultural sections of America, there is a belief that the industrial section has been, possibly not intentionally so, but has been favored at their expense, because all of us realize this thing, as I said a minute ago—that wealth can be created only by labor.

Banks don't create wealth. Merchants don't create it. Railroads don't creat it. Somebody has got to make something in the world that wasn't there before to make and create wealth. Therefore, there is only a certain amount of created wealth in America, or in any other country. When one class demands more than its share of that created wealth, it is axiomatic that the other class must get less than its share. If 70 per cent. of the people of this country shall get 90 per cent. of the accumulated wealth and the other 30 per cent. get only 10 per cent., that 30 per cent., gets less than its fair share of the created wealth, and has a right to complain. That is the American farmer, and I came here to talk to you about him today.

There are two plans pending in Congress now for farm relief. I shall discuss with you first what is known as the McNary-Haugen Bill. Neither Senator McNary nor Mr. Haugen wrote the bill. Senator McNary is a most excellent Senator from a western state. All of his people were Democrats except him, but when he grew up he noticed that all the people out there that voted were Republicans, so he was a Republican! (Laughter).

The McNary-Haugen Bill is the composite judgment of farmers, of economists, of educators, of practical business men all over this country. The plan was submitted to the most important economist of Great Britain to have him discuss it, because—let me go back and say this:

You will remember we loaned Great Britain and some other countries when the war was going on, quite a good deal of money. The other countries have been very reluctant to offer to pay it back. Great Britain came back and offered to pay, and made a settlement that I think was very generous. But the British people are a very astute lot of people. When they made the settlement, then they turned around and passed in the House of Commons what was known as the Stevenson Act. Raw rubber was selling in America when the Stevenson Act was passed at 17 cents a pound. When we got through fooling with it we were paying $1.40 a pound for it. In other words, we were paying our debt to ourselves, and handing them quite a large bonus each year by reason of the fact that they wrote up a bill and passed it through Parliament that said that only so much of raw materials shall be sold each month, and the consumer will pay what they think is a fair price, and what they thought was a fair price rose every month.

The man who was the engineer of that scheme came over here and went over the so-called McNary-Haugen Bill, which undertook to do for agriculture in a substantial way what the Stevenson Act did for rubber and did to us, and that is the bill we have now before Congress. It simply sets up a board whose business it is to find out all that may be known about agriculture—the best methods of cultivation, what crops are most likely to yield a good return, what products

will sell best, and when, where and how they will sell best. That is their first duty. Then there is an advisory council set up which is to represent some particular industry, like tobacco in Maryland, or live stock, or whatever it is that you have most of in your particular country. They are to know about the conditions of that industry there, and they are to advise this board. When the board shall have determined—that is, those members of the board which represent the Federal Reserve District, that produce 50 per cent. or more of that particular product—when they shall determine there is a surplus, then the law becomes effective.

What does the law do? First, you have got a revolving fund, which says this—they say it is a price-fixing bill and let me stop there to say, of course it is. The tariff is a price-fixing bill. The Esch-Cummings Bill was a price-fixing bill. Somebody's got to fix the price. I don't object to that. I don't want to go to the Maryland markets and say that I am going to fix the price at which you sell your merchandise. I don't expect to go to the bank and set the price of their loan money which we call interest, that it must be so-and-so. I don't expect to go to the railroad and say their tariff must be this or that. They fix those things. All I object to is, in addition to that, they are fixing the price of the things we are going to sell.

This bill undertakes to prevent their doing it, because it says this: "We provide $250,000,000. for a revolving fund." But that is merely for a start. If you will let me, I will go back and deal with cotton, because that's what we grow in my country, and I know more about that than I do about other things. In fact, all I know about marketing corn is that it takes a fruit jar to deliver it! (Laughter).

Suppose this organization says that there is more cotton than the trade will consume at this time at a fair price. Well, they must determine what is a fair price. It must be, of course, what the cost of production is, plus a fair profit to the people who grew it. If the market won't consume it, then they say, "Bring it here to these warehouses, these coöperative warehouses (or whatever the term may be used for the farm organization) and we will let you have that much

money on it, and we won't sell it in America for less than that." If it has to be sold in Europe and there is a loss on it, that loss is met in two ways. It is met first by the revolving fund, and then by what we are pleased to call an equalization fee, a fee on every bale of cotton that goes into inter-state or foreign commerce after the law shall have been declared to be operative. With this money we undertake to buy up the cotton, or loan money on the cotton as the case may be, whichever way the farmer shall desire, and keep it off the market until some time when it is needed and they will pay us our price for it in America. If they won't do it, and we have to send it to Europe at a loss, we will take our loss there and recoup ourselves from our equalization fee, or with our revolving fund.

Here is what would have happened if you followed the cotton market in 1926. God was good to us that year. The sun shone, and the rain came, and the boll weevils were not active, and we made the greatest cotton crop in the history of America, over 17,000,000 bales. In June, when it was thought that the crop would not exceed 13,000,000 bales, the kind of cotton we grew down home was selling at 24 cents a pound. But Mr. Jardine, the Secretary of Agriculture, got busy and commenced to issue estimates of what the crop would be. When the crop went up to 15,000,000 bales, the price came down to 18 cents a pound. When it reached 17,000,000 bales, the price came down, the quoted price, to 12 cents, but the actual farmer's price was around 8 or 9 cents a pound.

Here's what happened: They tell us under the Constitution, and we put it into the Constitution to keep the folks down home from working the Negroes to death and overtime, that you can't take a man's labor by law, neither can you deprive him of his goods without compensation; that every man must have his day in court. If you say he owes you and he says he doesn't, you have got to go to court and let somebody pass upon that question.

But under this industrial system, did they let anybody go to court to find out what this crop was worth? No. Here's what happened. We could have gotten $370,000,000.

more for 15,000,000 bales of cotton than we got for 2,500,000 bales more than that. Now, that's a funny thing. And we could have gotten more for 13,000,000 bales than we could have gotten for 15,000,000. So the fact that we worked by proxy and made a crop, and as I say, God was good to us, and the sun shone, and the rain came, for that fact, this industrial system actually fined us $670,000,000.

Here's what it did first. It took away from us that last 2,500,000 bales of cotton, and said it wasn't worth a nickel, because we could have gotten more for 15,000,000 bales than we could get for 17,500,000 bales. They took it away from us. They said it wasn't worth a copper, although the staple was as white, and the fleece as strong and long as any cotton that ever grew, and we know, and they knew, and you know that it would be spun into cloth to clothe a hundred million people. And yet, they said it wasn't worth a thing, and they took it away from us, and didn't allow us a cent on it. They didn't stop there. They put a minus sign in front of it, and it went down, and down until we actually sold it for less, for $370,000,000 less than we could have gotten for 15,000,000 bales of cotton.

That is the industrial system against which we protest. Had this bill been in operation, here's what would have happened. When the market commenced to drop until we could see there was more cotton than the mills would consume here at a profit, they'd say, "Well, this law goes into effect, and we declare you have a surplus of cotton." Then we'd have taken our $250,000,000. and bought all the cotton it would buy. When it wouldn't buy more we'd say, "Everybody who sells a bale of cotton must pay an equalization fee," and you know what would have happened. We could have actually put an equalization fee of $5.00 a bale on our cotton and gotten $370,000,000 plus $300,000,000 more for that cotton crop than we got. We could have gotten $120.00 a bale for it with a $5.00 equalization fee. As it was we sold it for $40.00 a bale.

I'd like to see a farmer who doesn't think it would be wise to have a law by which you could put up an equalization fee and get $120.00 for a bale instead of keeping the equalization

fee and getting $40.00 a bale. If you think that is wise, I wish you'd stand up so everybody can see what your wife has to live with!

You know, what made everybody mad was that the problem was too simple. For 100 years we had bank panics in this country almost every year, at least every generation they came along and swept away your accumulated earnings. They dropped out of a clear sky, apparently, and the wisest financiers in America or in the world couldn't suggest a remedy. Finally, the proposition was submitted to Congress to establish what we are pleased to call the Federal Reserve System. What's funny about it is that these bankers who now tell us this is economically unsound—that's what they told me down at Houston, although they had never read it—when the Federal Reserve System was proposed, there wasn't a banker in Baltimore that wasn't against it. If you will go find one that was for it, then I will say he has been in St. Elizabeth or some other place since. There wasn't but one nationally known bank in America that wasn't against the bill when it was proposed, but now they are all for it, because it is so simple, and it solved this question of bank panics.

They ought to have more confidence in legislation and less in their own judgment. If they were wrong on a proposition they had lived with all their lives, they ought not to be so sure that we are wrong.

The trouble with the farmer is, that you grow wheat, you grow corn, and I grow cotton. I want cheap bread, and you want cheap clothes, because you wear cotton clothes now. You didn't at one time, but under this prosperous era you have come down to it. You want cheap clothes, and I want cheap bread. Necessarily, we are in conflict with each other, and we want to organize, and you want to organize right here in Maryland with practically a homogeneous people and one industry. You won't all get together. You won't all market under the system. All this law does is to give you the framework, so if somebody wants to be a hog and let you try to hold up the market and let him go out and scalp it, he will have to pay his share to help hold it up.

That's the trouble with us. I am a member of the Arkansas

Cotton Growers' Association, and less than 8 per cent. of the cotton growers of that state form that association. The other 92 per cent. stay out of it. Well, 8 per cent. can't hold up the market. Whenever we hold back our product and the market goes up a little, these folks stay out and rush in and sell on that rise and break the market. They do it with wheat, with meat, with everything the farm grows. They sit back and scalp the market, and you bear the cost of trying to make the market they take advantage of.

This bill simply says, "My friend, if you want to stay out, that's all right, but whenever you sell, you pay your part of keeping up the market." (Applause). And he will come in, there's no doubt about it.

They say it's going to raise the cost of living in the city. Well, I think it will, a little. I am not quarreling about that. I made a speech here at Elkton one time, some years ago. I hope none of you are here now that were there then. Some man from this city whose name I have forgotten, preceded me. I remember very well that from his cheek bones down to the second button on his coat, he was all whiskers, that he had on a speckled vest and some "specs;" beyond that I only remember this —that he told the farmers up there, "You ought to think what fortunate people you are that you are living in the country and raising your children under such favorable circumstances." He said that it was a great blessing; that they escaped the perils of the city and the street. He said that you were so fortunate you were to be congratulated.

I asked him if he didn't live some place besides on a farm, and he said he lived in Baltimore. I asked him if he didn't love his own children, and he said of course he did, that I insulted him by asking him. "Why don't you get out on the farm where they will have all these blessings you are talking about?" (Applause). He told me I insulted him, but I'm not worried about that.

Here's what I'm coming to. I'm awfully tired, and I've got to leave, boys. God's been good to me; I was raised on a farm, and for 300 years, as far as I know anything about my family, we have been farmers. We love the soil. But I am not going to put my boys on the farm down there

to make a living and clothe my city friends at 50 cents on the dollar of what it costs! (Applause). I'm not going to sell them into industrial slavery, because that's what it is, and that's what's the matter with our city friends, and I don't blame them. Lots of them are unselfishly selfish. They have been fed and clothed at half of what it cost you to produce it, that is, if your wages are worth as much as an unskilled laborer around a garage.

Now, if I could open a business here in Baltimore and say, "To everybody that comes to work for me I will pay the standard wages, and in addition to that, I will pay half your dry goods bill and half your grocery bill," why, of course they'd work for me, and that's exactly what industry gets under this economic reign of ours. A man can go to town and get a job and get decent wages, and you stay out on the farm and bring him his meat, his milk, his bread, and other things at just half what it costs to produce it if your wages are worth as much as his. Down at home we grow cotton, and we will clothe him at just half what it costs us to grow it. Against that sort of a condition I protest, and against that sort of a condition a class feeling is growing up among the American farmers, and they protest, and so help me Almighty God, against that condition the united farmers of America are going to bring justice from some political party! (Applause).

I think we have got votes enough in the Senate, although as I said to the presiding officer a minute ago, I don't know. There are lots of people in public life, among the very best, who when they're sitting in the cloak room resolve to do certain things, and get out and vote the other way. A kind of psychology seizes them, and they vote the way they didn't intend to. In fact, I have known lots of able men to make a speech on one side of the question and vote the other way on it. It seems to be a system that some follow. They say, "If you're not pleased with my speech, look at my vote!" (Laughter).

In conclusion, let me say that I believe I ought to be able to know the average farmer. Let me say this about myself, because it illustrates what I want to say. Every member of

my family laid down their lives, either in the Southern Army or in a feud that grew out of it. My father was assassinated when I was six months old. He left the magnificent estate of $25.00. I went to farming when I was seven, for experience, and got it. The next year I was to have $3.00 a month. I didn't get that, because the man said I wasn't worth it, and I guess he was right about it. I have been a share cropper; I have been a tenant; have been a land owner. I think I know the farm proposition. As I said one time while I was a tenant I invented a system that was more or less followed in Arkansas, and I see it is observed somewhat in Maryland. It was this: If I fixed up the place I rented from the landlord, he made me pay more rent the next year, or he made me move.

So I devised this system. I commenced in the fall of the year to take the palings out of the yard and make kindling out of them. I took the boards off the barn and burned them, and by the time I got the place dressed up at the first of the year, nobody else would have it, and I could rent it for less money that year than I did the year before! (Laughter).

Every interest that I have is in the farm. I certainly want to see legislation that will be helpful and not experimental. I don't say this legislation is going to solve your problem without amendments. It would be a wonder if it did, because the Constitution itself, said to be the most remarkable ever struck off by the hand of man, has had nineteen amendments put on it. Of course, we are against the Eighteenth but it is there. Every act of Congress that regulates and protects American groups, it makes no difference what it is, has been amended. This bill possibly will have to be amended. But so help us, if you will help us get the votes, and you can do it, we are going to pass it, and then, if it doesn't work as well as we think it ought to, we are going to find out what is the matter with it, and do what is necessary to make it work. We are going to make the American farmer get his fair division of American wealth, or we are going to have an industrial revolution in this country! (Applause). I mean by "industrial revolution" that

we are going to invade the other man's field and see that thing that makes him rich is somewhat modified. If they won't let us get a living price for our products, we are going to tear down their tariff house.

I have taken too much of your time. I don't want to leave you like a boy down home was left. This boy's name was Charlie Johnson, and he weighed 125 pounds, and he had a sweetheart who weighed 240 if she weighed an ounce. He went to see her one time, and she felt under the sofa looking for her chewing gum, and commenced to chew and chew, and then she turned around and sat down without noticing where she sat, on Charlie. She sat there until eleven o'clock, and then noticing where she was, she said, "Honey, aint you tired?"

He said, "No, I aint tired now. I was tired about ten o'clock but I'm paralyzed now!" (Laughter and applause).

PRESIDENT DAVIS: We certainly have enjoyed Senator Caraway's talk. I know it's not necessary to say anything about it, only to express our appreciation and hope we will be able to hear him again. (Applause).

Now we have with us Miss Vera McCrea, of the New York Dairymen's League. We will be glad to hear from her now. (Applause).

THE BROTHERHOOD OF BETTER THINGS

BY MISS VERA MCCREA,
New York Dairymen's League.

Mr. President, Ladies and Gentlemen:

I want to say first that I'm not Charlie Johnson's sweetheart! (Laughter). I don't come from Arkansas.

A couple of weeks ago, the Secretary of your Federation, Mr. President, sent me a program of this meeting. When I observed the company I was to keep, I was tempted to wire him that I was incapacitated and unable to be present. You have listened this P. M. to one of the leaders of probably the most important work that is being done, educating the modern youth. The other gentleman is engaged in quite as

important a job. He is a specialist in the science of government. They have each outlined to you your responsibilities and what you as individuals should be doing to help them in accomplishing their work.

After all of the flow of wit and wisdom which you have heard, I feel as if I had just about the same ability to say the right thing as did Mrs. Smith who was arguing with her husband that she should call on her neighbor down the street whose husband had committed suicide by hanging himself in the attic. Her husband objected to her going, for he said she never did know when to say the right thing. After promising him that she would talk about nothing but the weather, he finally consented to her going. She went down the street rang the door bell, and waited breathlessly, finally Mrs. Brown appeared, and Mrs. Smith began by saying "What terrible weather we have been having lately." "Yes," said Mrs. Brown, "I haven't been able to get my clothes dry for weeks." To which Mrs. Smith tactfully replied, "That's very strange, especially since you have such a fine attic to hang things in."

It is always a privilege to come before a Farm Bureau group, however, for as a Home Demonstration Agent in New York State, I was naturally very closely associated with the Farm Bureau organization. It was through this group that I first became conscious of the need for organization and the possibilities farmers had for solving their own problems through such united effort.

Whenever I get discouraged and feeling that we aren't getting on as rapidly in organization work as we should, and when I've sat in on Committee trying to work out plans for reaching the people who are still unbelievers in organization, and when I've gone out and pleaded and begged them to come with us and help to stabilize this great industry of which they are a part, I like to think back to the picture of our first farmers. Our Pilgrim fathers. These folk, because they could not stand the suppression and oppression which had been imposed upon them—organized and set sail across the waters.

The problems which they had to meet were the problems

that any organization has to meet. They battled with the elements, they had to conquer the beast that they might be fed and clothed, and the struggle for life itself was not a small task. In the midst of all of these hardships, we are told, these folks stopped and gave thanks and drew up a policy for their future procedure. What part did the women take in all of this procedure?

Pictures show them standing side by side with their husbands and children, sharing equally the joy and sorrows, and doing their part of the work whatever it might be. These, friends, were the conditions under which our America was conceived:—man and woman working side by side in their fight for freedom. We might go one step back and think of how dearly our beloved America came into being. A man by the name of Columbus had a vision. He believed the earth was round. He explained his theories to various folks and begged for money to finance his project. He was laughed at and derided on every side but who was it, my friends, who made it possible for him to buy and equip boats to cross this seeming formidable expanse of water? It was Queen Isabella whose vision was broad enough to see the possibilities of such a venture. Thus we see the thinking of these two people, a man and a woman, uniting to couple an idea. In this particular instance, it was the discovery of a continent, the privilege of which we are enjoying in no small measure today.

Coming back to our Pilgrim fathers, we see them pressing westward to establish homes. Here again we see the women working side by side with their husbands in clearing the forests, in hunting, fishing and in doing her part in the preparation for the building of a new nation.

There were colonies of folks working, thinking and praying together. Then dissension began to break up these groups and a period of individualism seems to have developed when the general thought became "me and my wife and my son John and his wife."

As real life developed, we see the establishing of schools, of churches, of political units and of social organizations.

The Grange, which is national in scope, was probably the

first rural organization to furnish these social opportunities, and through it leadership began to be developed and through it the voice of the farmer we first heard in legislative halls.

Then came the Farm Bureau, bringing men and women on the farm a scientific knowledge of their jobs, showing them how to produce larger crops in a more efficient manner. It is teaching woman a higher respect for her job as a home maker. She is learning through nutrition programs that there are scientific truths underlying the feed of her family which makes for healthy, robust lives. Through her clothing, household decoration and home making projects, she is learning to put into practice the principles of art and science which create and develop beauty. Thus she is building a home that is mechanically efficient and spiritually satisfying.

Then came the ever increasing demand to know how to market the crops which were being produced in such quantities that the markets could not consume them. The most efficient answer up to the present time to this problem, seems to be the coöperative marketing plan and I'm very glad to know here in this great state, the Farm Bureau has been awake to the needs for such a program and has fostered these plans in selling the various commodities.

I am very glad to tell you that the Dairymen's League, which I represent, is successfully beginning its twelfth year of marketing milk, and it was never in better shape than it is at the present time.

Last month's financial statement shows a $10,000,000 business transacted during that month. This is the average business per month, so you can well imagine the volume of business that is being transacted. It seems to me the success of any coöperative depends upon just about four essential points:

1. A well informed, loyal membership.
2. Good leadership.
3. A high-quality product.
4. A good financial program.

I believe it is on the shoulders of the membership that the responsibility for all this exists. They are the Alpha and the Omega of the successful coöperation.

Four years ago I began work with the Association after a real need had been felt among the leadership for reaching the wives of the members. The need had been occasioned when the contract canvasses had found it easy to "sign up" members in localities where the women were interested and enthusiastic, and where they had discovered that in nine cases out of ten when the women were opposed the contract was not signed.

Naturally, I had to begin in the field where the women were, and so it seemed that the 789 local organizations which were organized, manned and were finally carried on by the membership, were the natural mobilization points. On studying the situation, I found that a large number of these groups were in a most dormant stage and consequently were not using the local organization as a means of getting back information to the individual members.

Remembering the old saying that the three quickest ways to transport news is to "telephone, telegraph and tell a woman," I felt that was where we could begin, that is where we did begin. The women are busy at work to plan social and educational programs which are supplementing the business programs. Of course, Nehemiah, in the building of the wall which we read about in the Good Book, had no more temptation to leave his job than we have had. However, I believe our experience is the natural experience of most organizations. I was born and brought up on a farm and have worked with rural folks all of my life, and we have decided there are just about four groups of people in every community.

1. There is the group who don't want to do much thinking.

If you will pardon me for being a bit crude, I want to tell you a story which I think expresses exactly that attitude of thinking. It is the story of a dog. This dog was sitting by the roadside howling. A carload of people came along and stopped near a farmer who was mowing hay on the opposite side of the road, to inquire the way to the next

town. As one of the men got out of the car and went around to the farmer, he observed this dog, and he said to the farmer, "What's the matter with that dog?"

The farmer looked at the dog, and then he very deliberately looked at the man and said, "Laziness."

"Laziness? What do you mean by Laziness? Laziness wouldn't make a dog howl like that."

"Well, it does that one. He's sitting on a thistle, and he's too damn lazy to get off!" (Laughter).

2. The superior-acting and talking group.
3. The non-enthusiastic.
4. The leader.

It is upon the latter group that rests the responsibility for mobilizing this group, and it isn't an easy one. But folks, it's your and our job, and the sooner we get at it and the harder we work at it, the sooner we are going to reap the results.

I believe our farmers' meetings are often too serious. We don't follow the rules laid down for us by the man who said we should begin on time and adjourn on time, and have something interesting between these two points.

Entertainment is important. Sing and laugh. Have inspiration. Give folks something that will lift them out of the commonplace and by all means send folks home with some information.

The farmers of the U. S., according to the 1920 survey, had $79,000,000 invested in their farms. Industry had $44,000,000,000, and railroads had $20,000,000,000. Can you compare the income received from the farmers' investment with that received by industry and railroad. What has obtained for the latter the larger return; I believe it is efficient management and organization and I believe these two principles applied to agriculture will bring the farmer out of the slough of despair. No one is going to do it for him, and no one could do it for him if he would, so folks, let's not fall into the habit that many folks think we are in, of always feeling sorry for ourselves and of talking down our own business. Let's not be persistently appealing for some to help us, but let's avail ourselves of all of the information we

can get, let's go home and analyze our job and then through these wonderful organizations, work persistently to meet the problems as they come, in the same persistent courageous way as did our Pilgrim forefathers.

It isn't a problem to be solved in a day, a week, a month, or a year, but you find men and women throughout the state of Maryland, when you unite with your neighbor on the South, North and West, can and will do the job, but as Kipling said, "It takes the everlasting team-work of every living soul."

Whatever organization we are working through, I believe we have but one goal in mind, and I believe we are rapidly moving towards that goal. Guest has expressed it as "The Brotherhood of Better Things," and has told the story much better than I could do in this poem:

The Brotherhood of Better Things

He dreamed of a better city, he longed for a fairer fame
For the home of his daily labors, and he talked of a brighter name.
For the scenes of his children's playtime and the place of his children's birth,
And he talked as a man who loved his town and was proud of her splendid worth.
He told her needs as he saw them, to him were her failings known,
And he wanted to build for her greatness—but he couldn't do it alone.

He was one of the many thousands who dreamed of a better day.
With visions of greater splendors when they should have passed away.
And each in his dream, unselfish, could picture a distant goal
When his city would rise in beauty and throb as a living soul.
But the dreams would have come and vanished, and the vision from earth have flown
Had each of the dreamers tried to work for his city's fame—alone.

You may think great thoughts for the future, you may fashion, and build, and plan,
But you never shall see your dreams made real save you work with your fellowman.
And never a greater city shall spring into being here
Save they the many have labored together its fame to rear.
Out of the hearts of our fellows has all of our greatness grown,
Together they stood for this purpose—for no one could do it alone,

Stand off by yourself with your dreaming and all of your dreams are in vain.
No splendor of soul or structure can man by himself attain,
'Tis willed we shall dwell as brothers, as brothers, then must we toil.
We must share in a common purpose as we have in a common soil.
And each who would see accomplished the dreams he is proud to won,
Must strive for the goal with his fellows—for he cannot reach it alone.

Let's all go home resolved to work a bit harder to make this dream come true.

(Applause).

(A one-act play "Bread" was given by the Kent County Farm Bureau. It was a highly creditable performance and elicited much applause. The characters in the play, which was written by Dr. J. Fred Eastman, of the University of Chicago, included: C. L. Randall, Mrs. William G. Smyth, Miss Louisa Travers, Mrs. C. L. Randall, Miss Mary Nicholson and Stanley Sutton). (Applause).

(The meeting adjourned at four-twenty o'clock).

THURSDAY EVENING, JANUARY 5, 1928

Annual Banquet

Each year the annual banquet held in connection with the annual convention of the Maryland Farm Bureau Federation is pronounced the best ever, but if there is any such thing as one being better than another, the banquet held on Thursday evening of the recent convention, capped the climax. Certainly there was more favorable comment as to the perfection of the last one than was heard at any other. The general smoothness of the program, including the turkey feed with the necessary trimmings, the singing and the speeches, were all dovetailed with such a degree of harmony and ease as to elicit the universal felicitation of the 400 or more men and women who were seated around the artistically

arranged tables in the huge dining room and banquet hall of the Hotel Rennert.

From the very moment that Prof. Charles G. Woolsey, song leader, with Mrs. Evelyn Harris as the accompanist, struck up "America" for the opener, there was never a dull moment and for the next two-and-a-half hours the banqueters were eating, laughing, talking, applauding and listening to the sidesplitting jokes as related by the speakers, including "Tom" Parran, the toastmaster. "Tom" has become a fixture as master of ceremonies at these annual banquets and it just seems to be his delight to mingle with and to make fun with his fellow Farm Bureau members of the state. His introduction by President Davis as toastmaster was the signal for the first outburst of applause from the responsive audience.

Chester Gray, Washington Representative of the American Farm Bureau Federation, the first speaker, explained his unheralded appearance by saying he had a great desire to attend one of the Maryland Farm Bureau banquets and that he just could not resist the temptation to motor over from Washington and that he was amazed at the wonderful spirit of Farm Bureau and social unanimity which greeted his vision as he entered the hotel. He briefly told of the activities of the Washington office in its efforts to look after the legislative matters reaching him from the State and National organizations.

Miss Mary Mims, of Louisiana, was next introduced and she, too, lauded the splendid fellowship displayed and out of which she said there could come nothing but harmony and success in the future of the Farm Bureau in Maryland. Her talk was of a highly complimentary nature and expressive of her admiration for Maryland and for the hospitality of its people, particularly the Farm Bureau folks. She said she would go back to her own state with fondest memories of her visit to this state and with a longing in her heart which would for a long time call—"Oh, Maryland, My Maryland."

"Tom" Parran, toastmaster, quickly noting the fact that she was "Miss" Mims and naturally unattached, caused

another uproar when he said if she was not soon the wife of some good Louisiana farmer, he intended to get the Governor of Louisiana to appoint a lunacy commission to examine the Louisiana farmers and that he wanted to be chairman of that commission. More applause.

Dr. Edward J. Cattell, of Philadelphia, mixed humor and pathos in his address with such dexterity that one moment the audience would be roaring with laughter and the next on the verge of tears.

He paid a high tribute to the officers of the Maryland Farm Bureau organization and pointedly commented on the genial and brotherly spirit as shown in the faces of the men and women before him. A good part of his address dwelt with the philosophy of life which he declared was grounded on the fact that we have the best form of government in the world and that the world is steadily growing better.

The last speaker, Dr. Thomas B. Symons, Director of the University of Maryland Extension Service, pointed to the fact that there are in Maryland something like 25,000 farmers who are unaffiliated with any organization intended to benefit agriculture. He urged the men and women present to take back to their homes and their farms the new vision of agriculture and agriculture coöperation, the kind which makes for the perpetuation of American life of the true type, the kind that makes all mankind akin.

He emphasized the fact that the large numbers of unaffiliated farmers in the state is a challenge to agriculture and to the officers and leaders in the agricultural organizations. He gave an inkling of what might be accomplished in the farming sections of the state if the 30,000 white farmers were united in one organization with one purpose and one idea in view, that of putting Maryland agriculture on a sounder and firmer basis. In all these endeavors he pledged the fullest support of the Extension Service.

A delightful feature of the evening's program and one which elicited much deserved applause, was the singing of a number of old-time songs by Mrs. W. E. Andesron, of Millersville, Anne Arundel County. Her renditions were charm-

ingly pleasing and each time she was compelled to give encores. She was accompanied on the piano by Mrs. H. C. Wigley.

As the concluding feature to a perfectly arranged and executed banquet program, Dr. Symons, in a well chosen speech which teemed with the brotherly spirit and the reward of meritorious service, presented the toastmaster, Mr. Parran, with a handsome silver vase, suitably inscribed, the gift of the Maryland Tobacco Growers' Association and the Maryland Farm Bureau Federation and his many friends in both organizations, as a token of their high esteem and high regards for the services he has rendered and is still rendering these two organizations.

FRIDAY MORNING,
January 6, 1928

The third session convened at ten o'clock, Vice-President Massey Presiding.

CHAIRMAN MASSEY: The meeting will come to order. The first business will be the Report of the Credentials Committee. Mr. Cockey.

MR. CHARLES T. COCKEY, JR.: Your Credentials Committee reports as follows: (Reading):

1. Following the policy for preceding years, your Credentials Committee recommends that there be seated from County Farm Bureaus, one delegate for each 50 members or major portion thereof, in addition to the Director for that county.

County	Director	Delegates	Total
Anne Arundel	1	2	3
Baltimore	1	5	6
Caroline	1	4	5
Carroll	1	2	3
Dorchester	1	2	3
Frederick	1	7	8
Harford	1	6	7
Howard	1	5	6
Kent	1	4	5
Montgomery	1	6	7
Queen Anne's	1	3	4
Talbot	1	3	4
Washington	1	1	2
Worcester	1	3	4

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2. On this basis an examination of the membership records leads us to recommend the following representation for these counties:

3. We recommend that Calvert County with 24 members, be permitted to seat a delegate in addition to the Director.

4. Following the Constitution as to representation of affiliated organizations, we recommend these organizations be allowed delegates as follows:

	Director	Delegate	Total
Md. State Horticultural Assn.	1	1	2
Md. Crop Improvement Assn.	1	1	2
Md. State Dairymen's Assn.	1	3	4
Md. State Bee Keepers' Assn.	1	1	2
Md. State Vegetable Growers' Assn.	1	1	2
Md. State Sheep Growers' Assn.	1	1	2
The Agricultural Corporation of Md.	1	3	4
Md. Tobacco Growers' Assn.	1	3	4
Md. Swine Breeders' Assn.	1	1	2

5. If these recommendations are accepted, there will be a total of 95 delegates in this convention, 69 from the counties, 24 from the affiliated organizations, and the President and Vice-President of the State Farm Bureau Federation.

Respectfully submitted by the Credentials Committee:

(Signed) CHARLES T. COCKEY, JR., *Chairman,*
M. FRANK HOLTER,
CHARLES I. BOYLE,
JOHN C. FISHER.

MR. J. W. JONES: May I ask how many you gave Montgomery County?

MR. COCKEY: Six delegates.

MR. J. W. JONES: I move the adoption of the report.

(The motion was duly seconded and carried unanimously).

CHAIRMAN MASSEY: You all know that complete automobile insurance is almost prohibitive for a farmer in these days. About twenty months ago the Ohio Farm Bureau worked out insurance for the farmer where he could carry complete insurance very much cheaper than you can get it from any insurance company. We are very fortunate

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this morning to have with us, Mr. Anstaett, of the Ohio Farm Bureau Automobile Department, to tell us about that. (Applause).

AUTOMOBILE INSURANCE

By E. C. ANSTAETT, Ohio Farm Bureau.

Mr. Chairman, Ladies and Gentlemen:

First, I want to say "Good Morning," if I might.

Second, I think you had this program pretty well staged by singing "Pack Up Your Troubles in Your Little Tin Ford." Without an insurance policy, you can't; but with an insurance policy, you can, I think.

Just before I get into the discussion of automobile insurance (I know your time is rather limited this morning), there are a few remarks I want to make as to why the Farm Bureau as an organization ought to be interested in automobile insurance.

First, I want to say I had a very pleasant little interview with your convention reporter this morning. It happens to have been my good fortune ten or twelve years ago, to use one of those stenotype machines. I suppose some of you never saw one before, and it looks like an infernal machine to you; you don't know what it might do. I remember very well when I was in court back in Ohio, in my cub days, we had a Prosecuting Attorney just about my build, with black hair, and he talked just about as fast as I do. I remember I used to wonder whether I couldn't give him a dose of some kind before he came into the court house every morning, so I could at least keep up with him. I resolved at that time, that if I ever got in a position where I was going to be the fellow who had to do the talking where somebody else had to take it down, that I certainly would do my best to keep my speed down so it wouldn't be so much of a task to keep up. I didn't realize at that time, just how difficult it is when you get on your feet to try to be other than yourself, particularly from the standpoint of speed of your speech and those things. I used to try it, and I'd get way behind. I'd think faster than I'd talk, and I finally gave it up. So if she will indulge with me this morning, I am going to try to be as natural as I can be.

Automobile Insurance—I presume some of you might wonder just why the Farm Bureau is interested in automobile insurance. I notice you have on the program, "Farm Bureau Auto Insurance—A New Service for Maryland Farmers."

You know, if we go back fifteen years ago, about the time I was using one of those machines, and just call to mind some of the conditions we had at that time—if those conditions still prevailed today, I think that question could be rightfully asked as to why we should be interested in automobile insurance, because you will remember in those days, fifteen years back in your communities, it was only the so-called well-to-do that had automobiles. About the only thing they used them for was to make a Sunday trip. They used to take the carriage out on Sunday and take the children to Sunday-school, and when the automobile came into use, it took the place of the carriage. About the only thing they used it for was to go to Sunday-school and maybe take a little trip. In those days they didn't dare drive at night anyway. They'd bring the car home, put it in the garage, dust it off, and cover it up so the varnish wouldn't get tarnished until the next Sunday.

At that time, I remember the accessory people used to advertise sort of a contraption to jack up the car in the winter time. They didn't use it in winter. You can remember when those things became obsolete. How many of you would buy that sort of a contraption today? But they were sold in all automobile accessory stores, even as recent as ten or twelve years ago, because they were in pretty general use in those days. About all we had was graveled roads, and you know if any of us got out on the road and got up to a speed of 25 miles an hour, we figured we could compete with Barney Oldfield in some speed race over in Indianapolis.

There was only a few hundred thousand cars in the entire country at that time, and if we took a trip on Sunday or any other time, it was only very rarely we'd pass another automobile. We could take a trip of several miles and we wouldn't pass over a half dozen cars. If you did meet other cars, the road wasn't wide enough for you both,

and you had to pull over to the side of the road and let the other fellow pass.

Accidents were very rare in those days, in fact, if there was an automobile accident it was generally in the headlines in the newspapers. You can probably remember when you drove though an incorporated village at a speed of more than 10 miles an hour (at least, that's what it was in Ohio), they'd arrest you and take you into what they called Justice of Peace speed courts and fine you for breaking the speed laws and driving over ten or fifteen miles an hour.

Those things sound funny today, don't they? Yet, that was only fifteen years ago when those conditions existed in your community; I know they did back in Ohio, and undoubtedly they did in other places.

Let's see what conditions are today. Instead of only a few hundred thousand cars, it is estimated there are something over 20,000,000 cars in use in the United States today, and with Henry Ford's ambitious program and with General Motors taking full page ads in the daily newspapers today, they are all set and all steamed up ready to go into production and sell to the public in 1928, 5,000,000 more cars. So at the end of 1928, we ought to have something between 20,000,000 and 25,000,000 cars.

I presume today there are as many automobiles in the State of Maryland as there was in the entire United States fifteen years ago. Undoubtedly, even in some counties in this state there are more automobiles today than there were in the entire state ten or fifteen years ago. Instead of only driving 25 miles an hour, now you can drive as fast as you want to go. It just depends on how fast you want to drive. With Ford coming out with a car with which you can get a speed of 50 to 60 miles an hour, I know there will be lots of young chaps who will want to see if they can't get 75 out of it; if they do, I think I will give them the full road when I see them coming.

Instead of a few well-to-do people in the community having automobiles, today every farmer has got a car, or almost every farmer. I think there are very, very few that haven't cars. You know, over in Ohio all you have to do

is pay $10.00 down and $5.00 a week and you have got an automobile. A farmer has not only one car, but it is getting to the point where he has one car for pleasure and two or three other cars, one or two for trucking. Perhaps he has converted his old car into a truck to be used generally. It is coming to be a necessity today, rather than a luxury. We use cars in our general business every day.

Instead of putting the car up for the winter, we drive it the year around as a rule. The developments of the last ten or fifteen years have brought the cost of a closed car lower than the price of an open car. Who would have thought that would have been possible ten or fifteen years ago? That has brought with it the year around use of the automobile, with its comforts. Instead of taking a little Sunday trip, many of us plan to take a little vacation and take our families along and drive all over the United States.

I don't know how many of you have been on the national road from here to Ohio, but I remember driving through last summer to the national convention of the Farm and Fire Mutual Insurance Companies, and the Missus and I tried to keep track of the number of different state licenses that we met on the highway coming from Columbus, Ohio, to Washington. I think before we got here we saw licenses from pretty nearly every state in the Union. You men know that is true. We are continually traveling all over the country. We are beginning to think now in our congested areas and around our congested districts of building two-way traffic lanes, two roads boulevard style, the cars on one side of the road going one way, and on the other side in the other direction.

I noticed an article in a Baltimore paper this morning, about a man who was advocating lighting the principal highways in the country so they can be used 24 hours a day.

That is just a little bit of evidence of what the developments have been in the last ten or fifteen years. Here is another thing I think is more or less significant of what we got into in the use of our automobiles. I presume all of you who have children going to school have the problem of buying a car for the children to go to school. They won't

even walk to school any more. When I was a kid I was glad to get a chance to go to school and get away from the farm to attend a full period of school. Nowadays it's different. I remember down home in my community, about a month ago that was the argument with my little brother, as to whether he could use dad's best car to drive back and forth, to and from school. And it's only a mile! That's about right, isn't it?

Now, when you drive your car down town, when you come here to Baltimore or most any county seat, you have trouble finding parking space. You can probably remember ten or fifteen years ago if an automobile, a new automobile was driven into town, all shiny, with a brass radiator and brass railings, the whole town flocked around that car to see what kind of an automobile it was. Today you never think of those things. As I said before, today a car is a necessity. It is for everyday use. It is just as much needed as the binder on the farm or any other implement you have on the farm.

Accidents are getting to be so common that in your daily newspapers they are lucky if they get a one-inch space. In order to get two inches, you have got to kill somebody with an automobile today. You know that's just about true. Another statement made by this man in the paper this morning, recommending the lighting up of our main highways—I noticed he made the statement that a survey made back in 1905 gave the entire casualties in this entire United States as only 600 people. Last year, in 1927, it is estimated that over 24,000 people were killed in automobile accidents.

That gives you somewhat of a picture of what we have gone through just in the last ten or twelve years. You know, we never appreciate just what this automobile meant to us until we began to reminisce a little bit and compare where we are today to where we were ten years ago. We don't appreciate that we have been going so fast.

In those days we very rarely heard of a car being stolen, because we knew every car in the community, and if Sam Jones' car was stolen, we'd recognize it if we saw it over in some other county. Very few cars were stolen, particularly out in the country, because the roads weren't paved.

Whatever cars were stolen were stolen in the city where the thieves had a better chance to get away. Today, thousands of cars are stolen every day.

In those days we had very few accidents. About the only accidents we had were when we'd meet a horse and buggy coming down the road; the horses weren't used to cars in those days, and maybe they'd get scared and run to the side of the road. Maybe there'd be a little accident then. That's about all we heard of in those days. Today, it is estimated, and according to our own experience back in our own state, that for every ten cars that are operated there is one out of that ten that will have an accident some time during the year, on the average. One out of ten. You may say that is high, but before I get through I think I will be able to give you some figures to show you that is actually the farmer's experience. That is a pretty high percentage when you begin to think about it.

Personal injuries—we very rarely heard of a personal injury suit, yet, today it has gotten so profitable that there is a certain element in the legal profession that makes it a specialty. They have gotten it down to such a fine point that if you are out on the road and have an automobile accident they will have one of their representatives meeting you at the door before you can get back home, who will want to take the case for you. That has happened in innumerable instances. I want to cite one or two instances here to show you what does go on, and what is being done.

I am not casting any reflection on the legal profession, because I want to say frankly that those tactics are frowned upon by the legal profession as we like to think of it. There are certain foreign elements who have gotten into it who haven't any scruples, who do make a practice of this thing.

About six months ago a man, an employee of the Norfolk & Western Railway, immediately south of Columbus, was injured in a railway accident. The actual facts are that there was a representative from a Cleveland firm who notified this man's wife in the city of Cleveland about the accident and wanted the suit before this man got home, before the railway company could notify her of the accident.

We have had some experiences of our own. We had a policy holder in Cleveland who got into an accident. Regardless of the details, the party in the other machine was injured, and to our knowledge six legal firms approached that party in the Cleveland hospital before he got out, and he was there only ten days, and wanted to file suit against the policy holder.

We had another one over in Youngstown, which has a large foreign element, where the facts show that a man just jumped behind some cars, and our policy holder came along very slowly, at fifteen or twenty miles an hour, and sort of brushed him to the side. The only injury we could find was that his coat-tail was torn a little bit, yet, in five days' time we had a damage suit on our hands for $5,000. That is an actual instance. We have had others.

We had one that I will never forget, where an automobile owner tried to crowd ahead of our policy holder in the line of traffic, and he just got in in time before a car passed going in the opposite direction. He just got in in time to let the other car go by, and as he did the line of traffic stopped and he ran right into the back end of our policy holder and damaged his car $50.00 or $60.00 worth. Of course, we had no liability. Our policy holder didn't see him. He ran into the back end of our policy holder's car. Just the same because we wouldn't settle for $50.00 or $60.00, we had a $5,000.00 damage suit on our hands. The wife of the man sitting in the front seat claimed he had a nervous disorder which caused the accident. That is an actual case.

Those may seem absurd; yet, they are everyday occurrences, because this element of the legal profession knows that every suit has a certain nuisance value, as we term it. In other words, an insurance company or others, will pay so much to get rid of it regardless of the facts of the case. They are taking advantage of that sort of thing. But when those conditions exist, we have got to face them.

From a farmer's standpoint, I think it is all the more reason why we must give them consideration, because if a farmer owns property, everybody around in the community knows it. We know more or less what each other's material

holdings or wealth is. As soon as you get into an automobile accident the other fellow will say, "John Jones owns a nice farm." They think dollars grow on farms, and the accident will give them a chance to get some of it, and the first thing you know you are in a suit.

In other words, under present-day conditions, when you drive your automobile out on the road you might just as well put in the back seat your farm, your home, what you have in the bank, and everything else you might earn on that farm—put it right in the back seat, and say, "This is the risk I am running every time I take my car out on the road," because that is the actual fact. That is just exactly what is at stake, particularly if you haven't got an insurance policy, as I am going to tell you a little bit later.

We recognized this condition back in Ohio about two years ago, and we made a survey to see what the conditions were right in our own territory, from the standpoint of how many farm folks were protecting themselves against this hazard, because as we saw it, here was a hazard that the farmer ought to protect himself against even more than fire. None of us would ever think of not having our buildings insured, would we? None of us would. Yet, if we have a loss if the barn burns or the house burns, that is the extent of our loss; it is limited to the building that is burned. Yet, if we get into an automobile accident, a case of personal injury may take everything you have got to defend the suit, or meet the damages if we have to be liable. Like the few cases I pointed out to you a while ago, it isn't a question any more of how careful we are and how carefully we drive, it is a question of what the other fellow is going to do. You don't know. We have had policy holders stop and pull clear off to the side of the road when they saw a car coming down the road that was out of control for some reason. I don't suppose you have the sort of thing we call "bootleggers," but we have had several cases like that, where they have deliberately run into our policy holder while he was standing still, and yet, it resulted in a damage suit.

We found among the Ohio farm folks, that only about 15 per cent. of the farmers had any protection at all, that is, insur-

ance on their automobiles, and in getting into it we found that about 75 per cent of that 15 per cent. had protection only against fire and theft. The records show, and the statistics kept by the insurance companies show that fire and theft is only a small part of the automobile owner's hazard, that the biggest part of his hazard is damage to his car and the damage he might do to another man's car, or property, and for personal injuries for which he may be liable through the operation and use of his car.

We began to ask why this condition prevailed, and we got back to the universal answer that it cost too much, that they couldn't afford it. So we began to look into the thing, and to make a long story short, we finally found that out in the State of Illinois, the Farm and Fire Mutual Companies—I presume you have Farm and Fire Mutual Companies here insuring farm property—had gotten together through their State Association and made a similar study of this automobile hazard, and the result of that study was the organization of an insurance company based upon the principles upon which farm and fire mutual insurance companies had been operating during the past half century.

Those folks discovered some things that were of tremendous advantage to the farmer as an automobile owner. They incorporated three or four basic principles that cut the cost of automobile insurance from 30 to 40 per cent. of what was being charged by companies operating at that time. Now, I don't want to be misunderstood. They didn't cheapen the insurance a bit. They kept it on just as sound a basis as insurance can be written by any company, I don't care where they are. But by incorporating about three principles they were able to reduce the cost of that protection to the farm folks, and at the same time, never have to sacrifice one bit of soundness from the standpoint of operating and keeping the company on a sound and secure basis.

Those three factors were—first, based upon the old farm and fire insurance company principle. They felt that if the farmer would pay in the beginning for the cost of selling him the need of automobile insurance, and then through the payment of his assessments or premiums as they call

them, without further effort upon the part of the organization or the company, he should only have to pay for that in the beginning, that he oughtn't to have to pay a total every year for keeping him sold on automobile insurance. That agency commission ranks all the way from 20 per cent. to 30 per cent. By cutting it out after the first year, which is the same principle you operate on in your farm and fire mutual companies, why, that in itself cut the cost of insurance around 25 per cent. without at all affecting the soundness of the protection the company was offering. That was the first principle they incorporated.

Second, they thought they'd follow the same principle of farm and fire mutual companies, and only insure cars owned by farm folks. I don't know that they recognized at that time just how much of a preferred risk the farmer was, but if you will just analyze it a moment, you know that in driving your car you are not as much of a hazard as the ordinary city hazard. You don't drive your car as much. You are out on the open road more, so why should the farmer have to pay in the same proportion when he doesn't have the same exposure to the hazards as the average automobile owner in the city? That was the second farm factor.

The third factor was, by having the automobile owner put up a certain amount in advance which was more than whatever the cost would be for the assessment period so-called, they eliminated entirely the necessity of making collections on delinquent premiums, delinquent assessments, and that sort of thing that is known in insurance circles as renewal property—they haven't any renewal property, and for that reason they could eliminate the expense of having to pay an agent to go out and see him every six months or every year to get him to renew his policy.

Those three factors, you see, affect the cost of carrying the automobile insurance hazard. That is the company's position—to keep the carrying of the hazard on just as sound a basis as any other company operating anywhere in the United States. By incorporating those three principles, they found they cut the cost by about 60 per cent., or the cost of in-

surance was only about 40 per cent. of what they were being asked to pay.

As a result of that the Farm Bureau organized a company on a mutual basis, since the mutual principle is really the coöperative principle that we are all interested in, and we are all promoting as farm organizations. We named it the Farm Bureau Mutual Automobile Insurance Company, and made it a Farm Bureau project, because the Farm Bureau made the study, and we felt it should be a Farm Bureau project.

We made it known and began to educate (if I might say so), our members to the need of automobile insurance through our county Farm Bureaus and through our townships at the various community meetings, and as a result of that we have had a reasonable growth in our own state. As your Chairman told you, we have only been going about twenty months, a little over 21 months. We issued our first policy April 14, 1926. In the eight months remaining of 1926, we issued a little over 5,200 policies. Last year, 1927 just closed, we wrote just a few hundred under 16,000 policies in Ohio, and we now have something over 21,000 policies.

During that time we have licensed 300 farm folks right out in their communities who know the folks and the neighbors, know as to whether or not they are a good moral risk, as to whether or not they are the kind of folks they'd want in their own company, and those folks have been going out talking Farm Bureau almost every day in the year. They had to talk Farm Bureau, because it was a Farm Bureau project.

During that period of 21 months, the Company has built resources of something over a third of a million dollars, and the Company now is in a position to protect its policy holders just the same, or just as well, as any other company operating in the country. Not only that, but let's see what this has done: by doing that it brought the cost down to what I told you about, and it has brought a complete reversal of what the farmer has purchased from the standpoint of his automobile insurance protection. Instead of having only fire and theft, these 21,000 policy holders that are on

the Company's books, 70 per cent. of them are fully covered —have full coverage.

To other companies operating in the country, collision insurance is almost unheard of, that is, they don't sell it, because it costs too much. But by a special form of collision we have, which is every bit of protection the farmer needs, we have brought that within his reach. He gets liability and property damage, protection against personal injury, to which he may be liable, and the property damage, which is damage to the other fellow's automobile or personal property—all that, together with fire and theft. Seventy per cent. of the 21,000 policy holders have full, complete coverage. When they can get it at a cost that is within their reach, why shouldn't they have it? I want to tell you a little about that later.

The question may be asked, so you can see the evidence of whether or not the Farm Bureau as an organization is filling a need—do farm folks need automobile insurance? The best evidence I can give to you as to whether or not they need it, is to cite a few experiences we have had with some of the policy holders back in our own state, and I think the hazard in Maryland is about the same as in Ohio. You have somewhat the same conditions.

I was telling you about a fellow who pulled up alongside the road to let the other car pass. This actually happened to our policy holder, and was one of the first damage suits we had against the Company. Our policy holder, a single fellow, took his best girl out to a party one night, and they took some neighbor folks with them, a farmer and his wife, who were sitting in the back seat. It was in the evening. They saw a car coming down the road that was sort of wobbling, and they thought there was something wrong, so they pulled clear to the side of the road. The evidence showed that his right wheel was too feet off the paved road, and from the left wheel there was 18 feet of paved road to give this fellow plenty of room to pass by. Our policy holder had stopped his car. Yet, this other car came down the road out of control, and deliberately ran into him, and killed the young lady who was sitting at his side.

The Prosecuting Attorney urged the policy holder to swear out a warrant for reckless driving, which was to be brought up before the Grand Jury. This Prosecuting Attorney's term expired two or three months after that, and he saw a possibility of getting a little fee, and the indictment was quashed before the Grand Jury. Two or three days afterwards this young man went to see the girl's parents. Before that they were very friendly, had known each other for a long time, been neighbors for a long time. This attorney had been to see the girl's folks and had induced them to sue our policy holder for $25,000. damages. We couldn't settle the case, so we had to go to trial. Of course, we beat the case.

Suppose you had been in that position? Would you have gone to the expense of getting the best legal counsel available and defended the case? What would happen? That is an actual occurrence.

Another one—we are going to try this case next Monday over in a county right near the Ohio and Indiana line. One of our policy holders was driving into a little village there one evening. It was dark and rainy. You know how difficult it is to see on a real dark night when it is raining. There happened to be an elderly gentleman, about 70 years old, walking right out on the paved road. Our policy holder wasn't driving very fast. He had another man sitting on the seat with him; at any rate, he struck this old gentleman, and in two or three days he passed away. We are defending a $10,000. damage suit in that case next Monday.

Here's another case. I'll never forget this one. We have a gasoline tax back in our state, and it was proposed by one of the leading representatives to our State Legislature. His name is Mr. Brown. He appreciates the service we have rendered since that time. He is one of the biggest farmers in Champaign County, in Ohio, and owns one of the best farms in the state. That farm alone is worth $25,000. or $30,000., and he also owns other farm property. Yet, one of our agents, eighteen months ago, spent a half day in order to sell Mr. Brown on the need of automobile insurance, and all he was insured for was liability and property damage.

He said he didn't believe in insurance, didn't need it. He had never had an accident.

I will never forget, two months afterwards, Mr. Brown called me over the telephone, and I could tell by the way he talked that there was something wrong. He said, "I am in trouble."

"What's the matter, Mr. Brown?"

"Well, I passed through a little town here this morning between seven-thirty and eight o'clock, and I was going very slowly, I thought. The cars were lined up on both sides of the street in front of the school house, and a little girl eight or nine years old dug out between two cars right in front of my machine, and I ran over her. I don't know how badly she is injured. What am I going to do?"

He was scared to death, and I didn't blame him. I told him to go home, and we'd take care of the case. We immediately sent somebody over there to see that she had medical attention. It was a poor family, and there were seven or eight other children in the family besides this little girl. Her father was a section foreman.

We went over and told them we wanted to take care of the case, wanted to give the little girl all the medical attention that was necessary, and told them to get a nurse, if necessary. The grandmother said she would take care of the little girl, and would rather have the money than pay a nurse. We told them to let us know how the girl was in ten days.

When the ten days were up they called us and one of our adjusters went over and talked with her, and found out the girl was all right. We told them we wanted to take care of all the expense, that it was an unfortunate accident, and our policy holder couldn't help it, but we wanted to do what was right. We knew this family was almost in destitute circumstances and needed everything they could get. We told them we wanted to make things right, and would pay for the medical attention, and would pay the grandmother for taking care of the girl, and wanted to know if that would be all right. The father had some reservations, I saw that. He said the little girl's coat was pretty badly

torn, that he had just bought that coat that fall and it was the only one the girl had. We said all right, we would pay for the coat and asked him how much it had cost, and he told us. Then he said one of her shoes was torn beyond repair. So we paid for new shoes and stockings and a few other things, and we sat down and wrote out a check for that family, and got a complete release for Mr. Brown.

What would have happened if Mr. Brown hadn't been insured? He would have gone over to see the family to try to settle that case, and unquestionably there would have been a little friction between those two people. They'd have blamed Mr. Brown. You can't tell what might have happened. They might have gotten into a little quarrel, a little difference of opinion, and you can't tell where that case would have gone. The result now is that everybody is happy, and that protection on Mr. Brown's car cost about $7.00 a year.

I could give you several more instances. I am not picking out particular cases; these are just cases that happen to come to my mind. We have a little folder that we call the "Sheckel's Case." Here is a picture of the accident. This was another case of a man coming down the road zig-zagging. Our policy holder didn't know what he was going to do. But this was a case where our policy holder lost his head and tried to get out of the way, and he turned on the wrong side of the road, and as a result he had a head-on collision. There were two people in that car. The other man's car was pretty severely injured. We finally settled that case for $350.00. The damage to our policy holder's car was $335.00. The other fellow, the one who owned the other car, wanted us to buy him a new car because he said we damaged his car to about $500.00 worth. We didn't think that was the thing to do, didn't thing our policy holder was liable to that extent, and refused to make settlement. He filed suit against our policy holder for $750.00. We are defending that case in a couple of weeks. There is no personal injury at all on the part of the man that owns the car, but he wants a new car which costs about $1,500.00 or $1,400.00, and he is taking this means to get it.

Our policy holder wasn't to blame, except that there was an accident, and you or I or anybody else—well, we don't know what we would have done if we got in a case of that kind and saw a car coming down the road out of control, to get out of the way. Regardless of how careful we might be, when we get into an accident we don't know who is going to have to pay before we get through with it.

I could go on with other cases. Here is a case I remember, the Nolan case we call it, over in Ohio where our policy holder did try to pass another car going down a hill, and collided with another car coming at a terrific rate of speed, and as a result he had a damage suit for $75,000. on his hands. He has a farm out there worth $20,000., that he has worked all his life to pay for. He has a family of five or six children, and is getting along in comfortable circumstances. Yet, that case lingered over a period of eight months. Supposing he would have had to go through that period wondering what in the Dickens that jury was going to do? You never know what a jury is going to do. We settled the case, and it cost us about $4,500.00, and it amounted to $5,000.00 before we got through and got a complete release for Mr. Nolan, and he says he wouldn't be without that policy for any money in the world.

I could go on and cite other cases. Just one thing—I want to refer just a little bit to our experience in Ohio on our various policy holders. Here we have an ad on the back of our Christmas number of our Federation News, and at that time we had 20,000 farmers in Ohio insured. That is publicity, and we had to have definite evidence before we published it. Twenty-two hundred of those families during 1927 were paid $65,200.00 for damages either to their cars, or because of fire, theft, or collision, as we call it, damage to their own cars. Ninety-four of those families had damage suits filed against them to the extent of $212,000. Eight hundred and two of those families were saved the loss of $21,230. because of property damage, damage they had done to the other man's car, for which they may or may not have been liable, or a total there of a little over

$300,000 last year, of claims that had been filed against our policy holders in 1927.

I think that is sufficient to prove that the farmer has got a risk, that he is assuming a risk when he is driving his automobile. They are farmers like you and me, you folks right here in Maryland, these 20,000 farm families in Ohio, and they weren't insured in the beginning of the year. We wrote 10,000 of them in the last six months, so those 20,000 didn't carry insurance for the entire year. Only 10,000 carried it for the entire year, and the other 10,000 carried it for six months.

What I have said gives you an idea of whether or not a farmer has a hazard. By eliminating the three factors I spoke of, and confining our risk to the farmers only, and eliminating any renewal commission charges, we brought the cost of automobile insurance down within reach of the farmers in Ohio. On a Ford car, for instance—here is the rate sheet, complete protection for fire, theft, collision, liability and property damage costs $17.20 a year. And we haven't cheapened it at all. That protection is just as sound as you can get anywhere. But we are segregating the farm hazard, and I think you will all agree that from a moral standpoint that a farmer is a much better moral risk. I won't take the time to go into that, because my time is passing away pretty fast.

Three or four months ago Mr. Stewart came over in our office and began to talk about this automobile insurance to us. We went over our experience, and he said, "The farmers of Maryland ought to have this protection, and I think it my duty, if anything can be done, to bring that protection to the farmers of my own state." To make a long story short, it resulted in a meeting with your board, and your board, after due deliberation and full consideration of the set-up, and whether or not our Company was sound, worked out definite arrangements, and just as soon as a few legal requirements can be met with here in your own state, such as any insurance company has to meet, it will be offered to your people by your State Farm Bureau and County Farm Bureaus in your own state. I think you folks are to

be congratulated to have men like Mr. Stewart who are foresighted enough to appreciate this service rendered to the farmers by the Farm Bureau, and the other men on your board in the State of Maryland.

Now, this is a Farm Bureau project. If it hadn't been for the Farm Bureau as an organization, we never would have written 21,000 policies in twenty months, the length of time we have been operating. Furthermore, by having some 300 men out in the field who had to talk Farm Bureau in order to sell automobile insurance, we have overcome quite a bit of prejudice. They have been selling the Farm Bureau idea among the farm folks in Ohio, and it has done much to create a better feeling and good will out in the various communities. It also means an income to both the County and State Farm Bureau which has enabled them to put that fund in to the financing of their other program in the county and in the state as well. When the cost has been brought down to within your reach, or when the cost is based upon your own hazard, you can't afford to assume that risk yourself. You can't afford to do it, because it is the same as fire insurance. If you have a farm fire mutual company carrying a risk of a number of farmers, it is putting you on a pay-as-you-go basis just like the mutual insurance company is. You are paying what the cost of the law of averages is on fire hazard and automobile insurance on this basis. That is exactly what you are doing, and when you do that you can't afford to set yourself up and carry the risk yourself when it can be done cheaper by the whole than by yourself.

I might go into several other phases, but I see my time is pretty well up. It seems to me that here is an opportunity for your Maryland Farm Bureau to serve all of its various affiliated groups that you have here. I think it is a splendid opportunity to serve every one of you, the members of all the groups, because here automobile insurance is just as much needed by a member of your Horticultural Association or any of the others as it is if he is a Farm Bureau member. Here is a real opportunity, I think, for you folks to get together behind something that is worth some-

thing to your own farm folks. Not only that. In addition to being able to serve them at a basis of cost—it is considerably less than you can get it anywhere else today, our own policy holders are getting this protection over there at a saving of about $450,000. a year, every year, in insurance costs. In other words, if these 20,000 farm families secured this same protection from other companies operating in the state who do not confine their risk to the farmer, they'd have to pay on an average of about $450,000. a year more than they are paying to their own company, and that is more than all the membership dues that are being paid in our own state. With a like number of policy holders in this state, you can effect a saving that is considerably more than the membership dues that you are paying in your County Farm Bureau, your State Farm Bureau, or your commodity associations or anything else. It is just an evidence, folks, of another accomplishment, another service, that can be rendered to the farm folks in your various communities through group and organized effort.

I thank you! (Applause).

CHAIRMAN MASSEY: I am glad that the Farm Bureau has signed a contract with the Farm Bureau Mutual Automobile Insurance Company, and not for altogether selfish reasons, either. About two years ago I was driving to Elkton to take the train to come to the Farm Bureau meeting, and I met a very fine automobile driven by a young lady. It happened to be Monday morning, and she had just taken her best fellow to the train. She was the daughter of the ex-States Attorney of Pennsylvania, who had a place out on Chesapeake Bay, where they spent their Sundays and holidays. She deliberately pulled into me on my side of the road crossing the white mark in the center of the road. She nearly scared me to death. She upset me in the ditch. She had no one with her, and I had no one with me. I hadn't any insurance. It was all her fault, but I was scared so badly, and I knew I couldn't be a good witness for myself. Two men came to the place where we were when they heard the accident from their houses. One of them had worked for years for this Philadelphia lawyer, and the other was a

farmer that I knew. I happened to have a happy thought, and I called this farmer over and whispered to him, "Let's take good notice of the position of these cars. I don't know what might happen."

I thought my car was pretty well torn up, but I didn't think her car was damaged. After a while, I got my car set on its wheels, and went on to the train. It cost me about $40.00 to fix it up.

A few days after that I got a letter from this lawyer, saying that it was going to cost several hundred dollars to fix his car up. It was a new one and had cost about $7,000, and every part where the paint had been knocked off had to be replaced. That set me to thinking. So I went back to see this farmer. I didn't know what he'd taken notice of. We took a tape measure and found out that her car had three wheels over the white line when he came to the accident, and I was in the ditch eight feet off the stone road on my side of the road. You know, I had to employ a lawyer and write that fellow some pretty sharp letters to keep from having to pay the bill.

I immediately got complete coverage on that car. Less than a year after that, my boy went out in the car and ran into a truck. The truck driver was exceeding the speed limit. He didn't see my boy, and for some reason, my boy didn't see the truck. The truck driver was on the wrong side of the road, and my boy was on the right side of the road. They were fixing a telegraph wire at the top of a pole, and both of them were looking up at the pole instead of at what they were doing. That accident would have cost me at least $550.00, and I don't know how much more if it hadn't been for my insurance policy. So we certainly do need complete coverage in the country.

The Resolutions Committee will now make its report. That committee is composed of myself, J. W. Jones, J. W. Lord, C. A. Duvall, W. S. Spencer, Charles Chesser, and Mrs. H. T. Williams. We have spent some time on these resolutions, and are ready to make our report. I believe you all have copies of the report.

(President Davis assumed the Chair at this point).

PRESIDENT DAVIS: It is very important that we pay close attention to these resolutions. I suggest that we have Secretary Stewart read them as a whole and then take them up separately. They were read as follows:

Resolutions

We commend the Maryland and American Farm Bureau Federations in their work during the past year, and pledge during the coming year our whole-hearted support in assisting the officers in carrying out the program of the two organizations.

We hereby extend greetings to all farm organizations and stand ready to coöperate with any organization wherein by so doing we can better agricultural conditions.

A National Agricultural Policy

We appreciate the actions of the Sixty-ninth Congress, which, in a non-partisan manner, passed the Surplus Control Bill. If put into operation, this measure would have marked the beginning of a sound economic agricultural policy in our nation.

Commodity marketing and surplus control are inseparable. Coöperative organizations, however, cannot bear the load unaided. Under certain conditions, in order that operations may be successful, the entire commodity marketed and not the member producers alone, must by the application of the equalization fee principle, meet the requirement that each marketed unit shall pay its share in the cost of its own stabilization and protection.

We insist that legislation which contains the principles embodied in the McNary-Haugen Bill with such improvements as experienced and good judgment may suggest, shall again be passed by Congress.

Muscle Shoals

We reaffirm our support of the principles now contained in the Madden Bill, H. R. 16614, of the Sixty-Ninth Congress.

Equalizing Domestic and ForeignCosts of Production

We urge such increases in import duties as are possible to be secured under the flexible provisions of the Tariff Act upon various agricultural products whose costs of production can be shown to exceed foreign costs. We recommend that the flexible provision be changed so that the United States Tariff Commission can be in position more efficiently to serve agriculture in the cases before it. We insist there should be no import duty on plant food constituents. We commend the Tariff Commission for its studious attention to and fair consideration of the agricultural cases recently decided and now pending.

Foreign products which can be used either in the raw state or as processed material in place of, or as substituted for, home-grown agricultural products should carry the highest possible rates of import duty.

Taxation

Debt reduction should precede tax reduction. Exemptions and repeated modifications of the national tax structure are undesirable. The basis of federal taxation should be ability to pay. We recommend reciprocity between the states in matters of estate and inheritance taxation. Estate taxes should be retained permanently. It is unnecessary to reduce corporation taxes in this period of national industrial prosperity. Federal taxes on automobiles should be eliminated.

Flood Control

An effective flood control program, to be national in effect, should contain the following features:

(a) Levees as the first line of defense:
(b) Diversion channels to give more flowage capacity in the lower regions of the Mississippi River;
(c) Parallel channels to give more flowage capacity above the diversion channels;
(d) Surveys of tributary streams to ascertain how to secure navigation, power developement and flood control in one effort;

(e) Reservoirs to be located on tributary streams, following the completion of surveys;
(f) Reforestation.

We rely upon the corps of army engineers to carry into effect the technical details of the above program, and expenses of the above plan to be borne proportionately by the Federal Government and states to be benefited.

Transportation

Transportation to agriculture assumes national, and even international aspects. We advocate among others, the following plans to prevent losses to agriculture by the payment of excessive transportation costs:

(a) An American Merchant Marine of permanent character under the authority of the United States Shipping Board;
(b) Readjustment of freight rates on the basis of Hoch-Smith Resolution;
(c) The development of the Great Lakes—St. Lawrence tidewater channels and an early completion of treaty negotiations between the United States and Canada;
(d) The rapid completion of the Mississippi-Missouri-Ohio-Illinois River system;
(e) Surveys and transportation developments on the other main streams;
(f) Legislation to provide that toll bridges on our national highways shall revert to the government when tolls have amortized cost and interest.

Agricultural Appropriations

We request sufficient federal funds for the following agricultural projects:

(a) Continuation of T. B. eradication;
(b) Quarantine and control of corn borer, and other insect and plant pests and diseases;
(c) Fundamental research by the United States Department of Agriculture, this to include research to extend industrial as distinguished from food uses of farm products;

(d) Continuation of the usual aid for construction of federal highways and bridges; and special aid for highway and bridge reconstruction in the recently flooded areas;

(e) United States Tariff Commission, in carrying out the flexible provision of the Tariff Act;

(f) Enforcement of the Milk Inspection bill passed by the Sixty-Ninth Congress.

European Corn Borer

Commendable progress in corn borer control has been made. We favor an appropriation by this Congress sufficient to carry on the work effectively. We commend the coöperation given by the farmers in the past and realize that wholehearted support by them is essential.

Japanese Beetle

We commend the action of the Federal Horticultural Board in not extending the quarantine to Maryland, pending a further demonstration of effective control of the pest by Maryland officials.

We request that sufficient funds be made available both by the United States and by the State of Maryland to check and/or eradicate the insect.

Packer and Stockyard Act

We favor the strengthening of the Packer and Stockyard Act, both as to the definite authority vested in the Department of Agriculture and its administration, for the purpose of further safeguarding the interests of the live stock producer and his coöperative associations.

We favor the Legislative Committee of the A. F. B. F. working in connection with a like committee from the National Live Stock Producers' Association to ascertain and support the manner or method which will result in the accomplishment of the above purpose.

Written Permission of Owner to Hunt

We recommend that the next General Assembly of Maryland so amend the hunter license law as to require any one hunting upon the premises of another to first secure a *written* permit from the owner or lessee of the premises.

Federated Fruit and Vegetable Growers, Inc.

The Maryland Farm Bureau Federation endorses the achievements of the Federated Fruit and Vegetable Growers, Inc., which was fostered by our American Farm Bureau Committee of 21, and recommend that growers of fruits and vegetables in the State of Maryland give careful consideration to the use of this seasoned and soundly established coöperative marketing service. The Federated Fruit and Vegetable Growers, Inc., is the only coöperative producer owned national marketing and distributing service available to the fruit and vegetable industry, with a service that can be enlarged and improved by a greater participation of growers and associations in its use.

Chesapeake Bay Boat Lines

We authorize the President of the Maryland Farm Bureau Federation to appoint a committe of sufficient number to coöperate with any other organizations working toward a solution of the Bay steamboat transportation problem.

Amendment Intermediate Credit Act

We urge Congress to amend the Intermediate Credits Act so that loans may be made to Agricultural Coöperative Purchasing Organizations in the same terms as the agricultural marketing associations. Also, for a shorter period than six months.

Chesapeake Bay Bridge

Resolved by the Maryland Farm Bureau Federation of the State of Maryland in convention assembled, that the Chief Engineers of the United States Army, and the Secretary of War, be and they are respectfully requested to

facilitate, in so far as is consistent with their duty, the construction of a bridge across the Chesapeake Bay, application for which is now pending before them.

Resolved further that it is the sense of this Federation that the construction of said bridge at the place and in the manner applied for, will constitute a public improvement of great importance to the people of the state.

Resolved further that a copy of this resolution be sent to the Chief of Engineers and to the Secretary of War.

Baltimore and Ohio Railroad

We extend to the Baltimore and Ohio Railroad Company our congratulations on having reached with such honor and success its one hundredth birthday.

We wish to express our appreciation of its general efficient service and of the coöperative attitude of its personnel toward the public it serves.

We feel that such an organization brings glory and credit to Baltimore and to the State of Maryland.

State Board of Agriculture

We believe the State Board of Agriculture should have as its members, men who are actually engaged in Agriculture.

We believe the Board as now constituted contains in its membership men whose activities and thoughts are entirely foreign to agriculture and its problems or whose interest in agriculture is secondary or political.

We request the Governor, in making future appointments, to give this due consideration. We instruct our officers to bring this matter to his attention prior to making each appointment.

Omnibus

We announce our position in support of:

(a) Securing electricity on the farm, under rates and conditions which are economically possible for agriculture;

(b) Coöperating with other agencies in farm fire prevention;

(c) Favoring a governmental inquiry into the growth and methods of capitalization of public utility corporations supplying electrical energy in the form of power and light;

(d) Developing a more intensive national reforestation program, said program to be in coöperation with and a correlation of state program, to prevent erosion of soils, and to bring present marginal lands eventually back into profitable production, with more adequate fire protection for our great forested areas;

(e) We favor a federal law requiring truth in market reports, and reports affecting marketing levels.

Appreciation

We express our thanks and appreciation to the Hotel Rennert, its management and employees for the very excellent service and coöperation rendered this organization and its affiliated associations in annual convention assembled during January 3-4-5-6, 1928.

We wish to thank the public press for the manner in which it has given information both before and after the various meetings of the Maryland Farm Bureau Federation and its various affiliated associations.

We wish to express our appreciation to all those who have so generously helped to make the program of this convention a success.

We appreciate the coöperation of the Police Department of Baltimore City for the service rendered during this convention.

(Mr. Massey read Resolution No. 1, and moved its adoption. The motion was duly seconded and carried unanimously. No discussion).

(Mr. Massey read Resolution No. 2, and moved its adoption. The motion was seconded).

PRESIDENT DAVIS: We have had it brought to our attention that this may be imperfect and unconstitutional, but we realize that even the Constitution, as was said during one of our meetings, has been amended nineteen times. Various other measures like the Federal Reserve System and such things were not perfect when they were first started, but they have been amended so that they are more nearly per-

fect. We feel that while this matter might not be perfect, we do feel it is a start in the right direction.

(There being no further discussion, the motion was put and Resolution No. 2 was adopted unanimously).

(Resolutions Nos. 3, 4, and 5 were read by Secretary Stewart. Mr. Massey moved the adoption of each one as it was read, which motions were duly seconded and carried unanimously. No discussion).

(Secretary Stewart read Resolution No. 6. It was moved by Mr. Massey that the resolution be adopted, and the motion was duly seconded).

MRS. DIXON: The resolution states that "the expenses of the above plan to be borne proportionately by the Federal Government and states to be benefited." What about Louisiana and Mississippi? They have been absolutely ruined by the overflow of the rivers of other states. We know it is a well known legal fact that we have to take care of our own waters. The waters of the different states emptied into the Mississippi River, and the flow grew and grew until it simply wiped out the farming country of Mississippi and Louisiana. Is it a fair thing that those two states that were ruined by the flow from other states should have to help bear the expense of this engineering? Isn't there some way by which those two states which have nothing could be left out of this? It will take them years to recover, and it isn't fair for them to have to bear any expense whatever. When we think of $600,000,000 excess taxes last year, a good deal of which has gone toward improving the beauty of Washington, why isn't it possible to exclude the states of Louisiana and Mississippi from any share in the expense of rehabilitating and building up their country where it has been torn down by the waters and floods from the rivers of other states?

MR. MASSEY: Mrs. Dixon, I think I can answer for the Resolutions Committee on that. You will notice the resolution says "proportionate." It doesn't say what proportion. We figured it this way—that those states that were injured by the floods have always had floods. When that country was settled they knew they were going to have floods, and

if that river is controlled they will never have any more floods, and therefore, they will be tremendously benefited. If they are going to be permanently and tremendously benefited, they should pay some part of that cost.

MRS. DIXON: They haven't anything to pay it with.

MR. MASSEY: They will have if they get permanent benefit. The Committee didn't think it was right for states that get permanent benefit not to pay some proportion of the cost. I think the proportion of Louisiana and Mississippi may be very small, or nothing, and we worded it that way on that account. Does that answer your question?

MRS. DIXONS I hope it will be nothing. We have to take care of our own waters on any property, and the waters of other states ruined Louisiana and Mississippi. The other states didn't take care of their own waters.

MR. MASSEY: I think the Resolutions Committee took this attitude—that this territory has always been flooded since there has been a country, and when people settled there they knew they were going to be washed out some time. If the river is controlled they will get a permanent benefit, and if you permanently benefit people, they should have to pay for it.

PRESIDENT DAVIS: Is there any further discussion?

(There being no further discussion, the question was put. The vote was split, and a standing vote was called for by President Davis).

PRESIDENT DAVIS: I declare the motion carried and the resolution adopted as read. We will proceed to the next one.

(Secretary Stewart read Resolution No. 7. Mr. Massey moved its adoption, and the motion was duly seconded).

MR. D. G. HARRY: Mr. Chairman, may I ask to have that briefly explained, as to what that means by readjustment of freight rates on the basis of the Hoch-Smith Resolution? I suppose it is on the basis of the freight rates in relation to the price of the commodity. After the price of commodities went down, freight rates went down; is that it?

SECRETARY STEWART: I understand the Hoch-Smith Resolution is nothing more than a resolution passed in Congress directing the Interstate Commerce Commission to make a

study of the whole agricultural freight rate structure of the country, and to work for a lowering of agricultural rates, and that is the purpose of this resolution—the adjustment of freight rates on the basis of the Hoch-Smith resolution.

MR. HARRY: For a matter of information, wouldn't it be well to define just what the benefits of that St. Lawrence tidewater channels would be to Eastern agriculture? Would it be an advantage, or would it bring the western grain here to our Eastern market so that the price would be that much less than we are now receiving? I'd like to have it discussed so we can get the information on it.

PRESIDENT DAVIS: I would say, in this case, while it probably wouldn't be of benefit to the Eastern farmer, we have always taken the attitude, I think the National Farm Bureau has taken the attitude, that we should look at this matter as pertaining to the whole country, and not to any one section. I personally believe that any reduction in freight rates will not be a help to the Eastern farmer, unless he is benefited in the way of feed and that sort of thing, coming into this part of the country. But it will be of big benefit to the Western farmer, and we have always taken the stand that we should only work for the benefit of the country as a whole. Anything we can do to help those Western farmers will indirectly help us, because it will let more of them stay in the business of producing grain instead of going into dairying as they are doing at present, and bringing a pressure on the dairy interests of this part of the country. So I don't believe that will hurt us, and it will probably help the Western and Northwestern farmer.

MR. MASSEY: I might add that there is another way to look at it. If the Western farmer can get his grain into the foreign markets with a cheaper freight rate through the tidewater transportation, they will use that means instead of coming to the seaboard by rail and then reloading.

PRESIDENT DAVIS: Is there any further discussion?

(There being no further discussion the motion was put and carried unanimously, and Resolution No. 7 was adopted as read).

(Secretary Stewart read Resolutions Nos. 8, 9, 10, and 11. As each resolution was read Mr. Massey moved its adoption, which motions were duly seconded and carried unanimously. No discussion).

(Secretary Stewart read Resolution No. 12. Mr. Massey moved its adoption, and the motion was duly seconded).

PRESIDENT DAVIS: This is a matter some of you fellows had better look after. You might be arrested if you go on somebody's else's land without a permit. Is there any discussion?

MR. COCKEY: Mr. President, I really don't wish to discuss this, because I know how the farmers feel sometimes when people come out hunting on their places, but as a gunner myself, I see where it is going to work a hardship on a man like myself. It is almost impossible to go around to our neighbors and get their written permission, yet, under this law you will be required to do so.

I see where it will be of benefit to us in one way, and that is in regard to city people. They annoy us a great deal, and sometimes do a great deal of damage. While I am not going to object to the resolution altogether, I am going to say I am very sorry indeed, to see it pass.

MR. MASSEY: Mr. Cockey, you are one of the honest gunners. All laws are a hardship on somebody. This was a law for a year or two, and was then repealed because it was a hardship on honest gunners. But the majority of gunners don't seem to be honest gunners. I know a man in my neighborhood who guns the whole season, and between seasons he locates all the partridges and quail in the whole district, and he follows them up. It makes no difference whose property they are on, he gets them all, and now we haven't many quail left. That kind of a gunner ought to be kept off your property, but you can't do it without this law.

(There being no further discussion, the motion was put, and Resolution No. 12 was carried with no dissenting votes).

(Secretary Stewart read Resolutions Nos. 13, 14, and 15, and it was moved by Mr. Massey as each one was read, that it be adopted, which motions were duly seconded and carried unanimously. No discussion).

(Secretary Stewart read Resolution No. 16. It was moved by Mr. Massey that it be adopted, and the motion was duly seconded).

PRESIDENT DAVIS: I'd like to say at this time, I don't think any improvement that has been advocated in this state for a number of years will do more to bring this state closer together than this one. We have some counties on the Eastern Shore which are very near neighbors, but it is hard to get across the Chesapeake Bay. Right at this time some of our delegates had to drive around quite a distance to get here on account of the ice in the Bay. I think nothing could be done that would bring this state closer together and make our Eastern Shore people feel that we are really all one state. They are not far away from Baltimore, the center of the State, but it is a hard matter, very often, to cross that Bay. I believe we should do everything possible to bring this matter to a happy conclusion.

(There being no further discussion, the motion was put and carried unanimously, and No. 16 was adopted).

(Secretary Stewart read Resolution No. 17. Mr. Massey moved its adoption, and the motion was duly seconded).

PRESIDENT DAVIS: I want to say that the Baltimore & Ohio Railroad is an organization, that as Marylanders, we are all proud of. They certainly have reached a high point of efficiency, and I think that every Marylander ought to feel that in so far as he can, any business or any help he can give to the Baltimore & Ohio Railroad ought to be given willingly.

(There being no further discussion, the motion was put and carried unanimously).

(Secretary Stewart read Resolutions Nos. 18, 19, and 20. Mr. Massey moved their adoption as they were read, which motions were duly seconded and carried unanimously. No discussion).

PRESIDENT DAVIS: Now, I think it would be proper to adopt this report as a whole.

(It was voted on motion duly made and seconded, that the report of the Resolutions Committee as a whole be adopted).

PRESIDENT DAVIS: There is one thing this Resolutions Committee hasn't done. I feel that we have had one of the most successful meetings that we have ever had. Everything has gone along smoothly, and we feel proud of it. I have attended a good many conventions, and I think the way in which this convention has been organized and carried through is certainly a credit to our Secretary, Mr. Stewart. (Applause).

A great many people from different parts of the state have come to me during the convention and remarked on how smoothly and how efficiently this convention has been carried on, and some of them even went so far as to compliment me on it. I had no part in it; the whole job was Mr. Stewart's, and he has carried it on just as efficiently as he has always carried on these programs, and I think this convention owes him a rising vote of thanks.

(The audience arose and applauded).

PRESIDENT DAVIS: Are there any other resolutions from the floor?

DR SYMONS: Mr. Chairman, there is one resolution which I did not bring to the attention of the Committee which I would ask you to consider at this time. It has reference to the re-location of the Farmer's Market in Washington City. We have a real issue there on behalf of the farmers of Prince George and Montgomery Counties. We had quite an effective resolution drawn up and adopted by the State Grange, and I think the wording of that resolution would cover the point for this convention. It is that the farmers are unanimously requesting that the Farmer's Market be located on block 669 Northwest, and that every effort be made to ask our Representatives to use their good influence in Washington, on behalf of the farmers' interests in having the Farmer's Market located in that section of the city. We can make a brief resolution, or you can accept it that way. I believe some of the members here remember the wording of the rsolution that was adopted by the State Grange, together with the preamble, etc.

However, if you wish it the way I remember it, I simply move that this convention endorse the action of the farmers

of Prince George and Montgomery Counties in requesting that the Farmer's Market be located in Block 669 in the Northwest section of Washington City.

(The motion was duly seconded by Mr. Jones).

PRESIDENT DAVIS: I'd like to say at this time, that a short time ago Mr. Gray called me up from Washington and said it was a matter he wasn't any too familiar with, and wanted to know what our Farm Bureau wanted to do about it. I told him anything that was for the benefit of the farmers of Maryland, we were whole-heartedly behind, and any time our state office could give him any assistance, all he had to do was to call on us, and we would be there. I want to say now, that any time we can be of any assistance in this matter, we are certainly going to be on the job. The way it happened to fall to me—Mr. Stewart was home sick at the time, and I happened to get this word from Mr. Gray, and I knew that it was our policy to do everything we could to help any of our people in this state. Any time we can be of any help in any way, all you have to do is call on us, and we will be right on the job.

Is there any further discussion?

(There being no further discussion, the question was put and carried unanimously).

PRESIDENT DAVIS: I am now going to ask a gentleman who is rather backward to take the Chair. He said he would like me to introduce him to this meeting. I rather think he needs no introduction, because we all know him and love him, and we all realize the help he has been to farm organizations, and the noble work he has done, but in as much as he is very bashful and young, I will introduce him to this meeting Mr. E. P. Cohill. (Applause). I am going to ask him to preside over this meeting while we have our annual election of officers. (Mr. Cohill assumed the chair.)

CHAIRMAN COHILL: I am very glad, Ladies and Fellow-Farmers, to be with you today. I will try my best to keep peace. I was always able to keep peace in the family.

SECRETARY STEWART: Mr. Chairman and Members: I guess when you see me get up and make this annual statement, you think it is getting to be a stereotyped job, but

as Secretary of the Federation and Secretary of the Board of Directors, it so happens that according to the Constitution of our Federation, the Board of Directors is instructed to serve as a Nominating Committee to name to this convention the men who have been selected as President and Vice-President of the Federation.

On Wednesday night of this week, at the Directors' Meeting, the Directors unanimously nominated James W. Davis, of Harford County, as President of the Federation (applause), and E. Thomas Massey as Vice-President. (Applause).

I know that this is about the only chance I am going to get to make a speech. I know that you folks are glad to have presiding right at this time, the man I call the Father of the Farm Bureau movement in the State of Maryland. (Applause). He has served as President of this Federation; he has served on the National Board of the American Farm Bureau Federation, and just at this last annual meeting he stepped down off of that Board after having served with such distinction, and having represented this state so ably, and our own fellow farmer, that man who smiles, who keeps every one happy, who puts that lubricating oil of good fellowship on the whole works, Mr. James W. Davis, was selected at the National Convention in Chicago, to succeed Mr. Cohill on the National Board. (Applause).

CHAIRMAN COHILL: There was one honor I received out there that I appreciated very much. I was made Chairman of the Committee of Home and Community Work! (Laughter).

You have heard the two nominations. It is the privilege of any director or voting delegate to make further nominations if it is so desired, from the floor. Are there any further nominations for President and Vice-President? If not, we will proceed to the election. What is your pleasure?

(It was voted on motion duly made and seconded that the Secretary cast the unanimous vote).

SECRETARY STEWART: I herewith cast the ballot for James W. Davis, of Harford County, for President, and E. Thomas

Massey, of Kent County, for Vice-President of the Maryland Farm Bureau Federation. (Applause).

CHAIRMAN COHILL: I thank you very much for your kind attention during this brief period. Mr. Davis, take your job! (Applause).

(President Davis resumed the Chair).

PRESIDENT DAVIS: I have no speech. You know me well enough to know I never made a speech. I have never had a speech, and I haven't been able to get that speech made up yet.

MR. COCKEY: It was such a surprise for you you didn't prepare one! (Laughter).

PRESIDENT DAVIS: I have sometimes made a few notes, but I always forgot what the notes were and just said what came first in my head. That generally is not very long. But I will say, in looking back over the past two years, I feel that the Farm Bureau hasn't gone back. Our membership is not as large as it used to be, but at the same time, we have a real, good effective membership, and as our report showed the other day, we have several things to be proud of. We have paid off our indebtedness.

I want to mention the coöperation we have received from the Grange, from the Dairymen's Association, from the Tobacco Growers, and also the Extension Service, and I might say the State University. We certainly feel like we have the whole team harnessed up and ready to go. You know, if you have ever undertaken to haul a big load, when you got out where the going was a little difficult and the load was heavy, if you undertook to start that load and only one horse in the team would take hold, no matter how good that one horse was you'd have a lot of trouble; but if you had the whole team ready to go, why, the load was moved easily.

That seems to be our fortunate situation today. I feel that with any of these organizations, if we have trouble and we need any help, we know who our friends are, and we know before we call on them that we are going to get assistance if it is in their power to give it to us. We certainly have had whole-hearted coöperation. I don't think the conditions could be any better, and I feel sure that next

year in Farm Bureau work, and in state organization, and in work for the benefit of the farmers, there never have been better conditions than I feel that we have now.

I feel that we have a real job before us. There are lots of things we ought to do and want to do, and I feel sure that with the help that we are sure to receive we can certainly do a lot of good on the job. I thank you for your renewed confidence, and I think I have about come to the end of my speech. I thank you very much. (Applause).

At this time, we have with us a gentleman who has always given us the best kind of support. We have never called on him to do a job he hasn't been ready and willing and able to do, and we have had just the finest kind of help from him in a good many instances. He is one of the real wheel horses. That is Mr. Massey. (Applause).

MR. MASSEY: Mr. President and Fellow Members, I feel grateful to my President for this opportunity. I say my President, because if you will recollect, at the meeting of the Board of Directors down at Cambridge, I had the honor of putting him in nomination for Vice-President. I followed that up a year or two ago, and it was my honor to put him in nomination for President. I think you will all agree with me that I made no mistake.

I don't know why he thinks that because he works he doesn't have to make a speech. I don't do any work, so I have to do the speech-making. But I have been close enough to him to know that he is a real worker, and he is always on the job. I don't know what I could say more for our coöperation than our response back in our counties of getting members, and loyal members for the Farm Bureau, any more than to tell you a story that I heard told out in Chicago.

Adam and Eve were given a very fine farm, and so long as they coöperated they had that very fine farm, but just as soon as one began to listen to outside influence they lost that farm. Now, we want to listen to the inside influence in our organization, and not the outside. We don't want to lose our farms.

I thank you very much for this honor. I will do my best to uphold the hand of your President. (Applause).

MR. COHILL: Mr. Chairman, I forgot when I had a chance to talk, to tell this story. I heard this story over in Europe. There was a man who was drowning. A man who was standing on the shore jumped in to save him, and caught hold of his arm, and the arm came off. He jumped in again and grabbed him by the hair, and he had a wig on, and that came off. He tried again, and grabbed him by the foot, and his leg came off. Then he was about to give up, and the people on the shore said, "For God's sake, go in and help that man!"

He said, "How am I going to help him if he won't hang together?" (Laughter).

I think that is our position right now. (Applause).

PRESIDENT DAVIS: Now we are coming down to the closing minutes of our convention. If there is any other business, or anyone has anything to say, now is the time. I thought perhaps some of you that are real speech-makers could really give us a speech, because I know that you don't expect one from me, and Mr. Massey is a farmer, and Mr. Cohill is a farmer. I don't know if any of us qualify as speech-makers, but I thought perhaps some of you boys that have had better advantages than we have had, perhaps had more time to think about these things, could give us a real speech. Now, if any of you have got such a thing laid away in your pockets, I hope you will bring it out and let us hear it.

MR. JONES: I don't want to make a speech, but I don't think we ought to adjourn this magnificent convention we have had here, without at least expressing our appreciation to Mr. McKnight and Mrs. Harris for the splendid service they have rendered us in helping to entertain us (applause), and I, therefore, move that we give them a rising vote of thanks for their services in leading the musical part of our program.

(The motion was duly seconded and carried, and the audience arose and applauded).

PRESIDENT DAVIS: Is there anything anyone wishes to bring up? We have some time left. Before our closing meeting was held on Friday afternoon, and everybody was rather

in a rush to get away to catch a boat or train, or else to start the long drive home in their automobiles, but this time that is not the case, and if anybody has anything to say, we'd like to hear it.

MRS. JONES: Our Home Committee Chairman is elected by the Chairmen of the various counties, but I think it would be nice if this body would endorse their election of Mrs. Harry Williams, of Kent County. I so move.

(The motion was duly seconded).

PRESIDENT DAVIS: The endorsement of the election of Mrs. Harry Williams has been recommended by Mrs. Jones, and as we all know, nobody has done more faithful work in the home and community section of our organization than Mrs. Jones, and if she endorses Mrs. Williams, I don't believe we will make any mistake in confirming that nomination or election.

MR. JONES: I am from the home of Mrs. Jones (laughter) and, therefore, I want to move that the convention assembled here endorse the election of Mrs. Harry Williams.

(The motion was put and carried).

PRESIDENT DAVIS: I think I'd call that vote unanimous. (Applause). I don't know where Mrs. Williams is, but I think she certainly ought to give us a speech. Some one tells me she left on the eight o'clock boat this morning. We are mighty sorry we don't have her here so she can give us a real speech, for I know she can do it.

MR. BURGEE: I am not going to make a speech, although I sent to Sears and Roebuck for one, but it didn't get here in time! (Laughter).

PRESIDENT DAVIS: I am mighty glad you told me they have them, because maybe I can get one! (Laughter).

MR. BURGEE: I was going to say, in going back to our respective counties, that possibly one idea above all others, in the roster of our membership, should be uppermost in our minds. I will give you a story I read the other day that will help those going out into the field.

There was a Methodist preacher (I say Methodist because that is my faith), appointed in a new parish, and there were three gentlemen in that town that had never joined

the church. They made it a point to call on the good brother and said, "We have come over, Reverend, to ask you a question."

"All right, proceed."

"Is it necessary for a man to join church in order to go to heaven?"

The preacher said, "of course, not."

They all rose and shook him by the hand and said, "We are certainly delighted to have such a broad-minded man in our midst. We are right with you."

The minister said, "Will you allow me to ask you a question? I want you to answer it just as frankly as I did."

They said yes, so he said, "Why in the hell do you want to go to heaven that way?"

When you ask men to join the Farm Bureau and they ask if it is necessary for agriculture to be successful to join the Farm Bureau, tell them it is barely possible, but ask them what in the hell they want to succeed that way for! (Applause).

PRESIDENT DAVIS: I don't know, there ought to be two or three more speeches hidden away. Probably some of these people have sent to Montgomery Ward or Sears and Roebuck for some speeches, and we'd certainly be glad to have them.

MRS STEWART: I'd like to see a vote given for Mrs. Isaac Dixon. She entertained the whole cast that gave that play yesterday afternoon, and she has done so much on the Eastern Shore in helping the Farm Bureau organization movement, I think, giving prizes for new alfalfa plots and that sort of thing.

MR. COHILL: I was told that Mrs. Dixon helped to defray the expenses of Mrs. Williams out to Chicago.

MRS. STEWART: Absolutely.

MR. COHILL: She was a great worker out there among the women in Chicago.

PRESIDENT DAVIS: I think we all very much appreciate what Mrs. Dixon has done. She has been a real help to us. Her interest shows that her heart is in the right place. We all feel that she is one of us, and I think a rising vote

of thanks to Mrs. Dixon would be in place at this time. (The audience arose and applauded).

PRESIDENT DAVIS: Now we will have a song or two, and I hope that our next convention will be as good a convention as this one, and that this coming year will be a better year in Farm Bureau work, and that we may be able to do more to help the farmer and make conditions for us as farmers better in the coming year than we have ever been able to do in the past.

MR. ANSTAETT: I haven't any speech to make, and I haven't any stories to tell. I am not very good at telling stories. I might go to Sears and Roebuck or Montgomery Ward and get some. But I have had several inquiries since I have been sitting here, regarding future plans for automobile insurance. Mr. Massey has handed a little pamphlet out to you on automobile insurance. Unfortunately, because of the fact that arrangements are not all complete yet, not only with our State Insurance Department, but also here, we haven't been authorized yet to print any literature with your Maryland Farm Bureau insignia on, instead of Ohio, but if any of you want any of these pamphlets before you leave, I will be glad to give them to you with the understanding that you know it is going to be Maryland Farm Bureau when you come into your own state.

DR. SYMONS: Mr. President, there is an announcement I neglected to make last night, and that is, that our marketing conference will be held the week after next, together with the meeting of the Extension Service specialists and County Agents. We have been able to get Mr. J. R. Howard, who is on a lecture tour in the country, and he will deliver a lecture before our conference on the 17th. All of you know Mr. Howard, First President of the American Farm Bureau Federation, and upon hearing of his availability we were mighty glad to have him come down to lecture to our group.

A cordial invitation is extended to all members to come to College Park to hear Mr. Howard. We will be glad to have any member of the association attend any day of the conference for the discussion of marketing and various problems.

PRESIDENT DAVIS: I think this is a very important matter, and I know the Extension Service is doing a lot of work along this line. They used to come around and tell us how to make two blades of grass grow where one grew before, until we got too blame much hay. Consequently, today you can hardly sell it. Now we are certainly mighty glad to know that they are trying to show us how to sell anything we grow, and I know that if we follow their instructions it will be a lot of benefit to us.

There has been one trouble with lots of things the farmer had to sell. He just gathered up everything in a crop as it came up from the ground and put it on the market, and many a time he didn't get the price he thought he should have gotten, but very often the reason for that was that he didn't have much grading. I do know that a lot can be done along the line of selling a little better product, or, as our dairymen have done, making the product a little better than the other fellow's, and then we can take our produce to market with the assurance that it is just a little better than anybody else's produce, and we are going to get a pretty good price, a very much better price. I certainly think that work the Extension Service is doing today is going to bring big results.

We will now close with the song, "Auld Lang Syne."

(The members sang "Auld Lang Syne").

MR. MCKNIGHT: When Mr. Cohill told that story about the man who was drowning he didn't finish it. After he saw this man try to save that fellow, he went out and thought he'd try to be a hero, too. He was down at our ocean resort, Ocean City, Maryland, one time, and he heard the cries of a young lady way out in the surf. So he ran up from the beach and went into the drug store and threw something out to the young lady, and then he came back and telegraphed the Carnegie Foundation for a Hero's Medal, and they wanted to know what it was all about. Well, he said he saw this young lady out in the surf being washed out by the waves, so he ran to the store and bought a cake of Ivory Soap and threw it out to her and said, "Here, this is to wash her back!" (Laughter).

(There being no further business, the meeting adjourned at twelve-fifteen o'clock).

REPORT

OF THE

Maryland State Horticultural Society

FIRST SESSION

Tuesday Morning, January 3rd, 1928

Baltimore, Maryland

The thirtieth annual meeting of the Maryland State Horticultural Society was convened in the auditorium of the Odd Fellows' Hall, Baltimore, Maryland, Tuesday morning, January 3, 1928, at 10 o'clock, the President, Mr. G. Hale Harrison, presiding.

PRESIDENT HARRISON: The meeting will come to order. We will have the report of the Secretary-Treasurer, Mr. G. Rust Canby.

REPORT OF THE SECRETARY-TREASURER

G. RUST CANBY,
Silver Spring, Maryland.

We are now entering a new year. This means to the fruit growers not the beginning so far as the production of a crop, because the successful grower employed methods to stimulate a 1928 crop while actually producing that of 1927. The season does, however, mark the dividing line between the rush season of harvesting and marketing of one crop, and the time for more thought of the next.

We have experienced, generally speaking, a short crop immediately following one of the largest on record, and I think that the experience has pretty well convinced us that an over-production is possible, even if we maintain the present acreage of bearing trees. So long as we continue to improve our quality and pack as we have in recent years,

the optimism that is part of the fruit grower's make-up, might be justified.

At our last meeting there was expressed a desire that we enlarge on this meeting by inviting displays of orchard and packing house equipment. Your committee spent considerable time on the subject, and after going pretty thoroughly into detail, it was thought that accommodations that would be within our financial reach would be rather cramped. We then agreed to have such a display in conncetion with our summer meeting, and this I believe, added a feature that made our meeting at Hancock one of the outstanding meetings of our history. This success was largely due to the splendid setting provided by Mr. Carpenter and Mr. Cohill.

We have tried through three news letters, to keep our membership in touch with what was going on. These were edited only when it seemed there was worthwhile information to convey to the members.

The program provided for this meeting should prove of interest and great value. It has been based upon suggestion from growers in every section of the state, and I feel certain that it will throw light on many of our perplexing problems.

As Treasurer, I beg to submit that a balance of $101.39 exists, and request that an auditing committee be appointed to examine the accounts.

PRESIDENT HARRISON: You have all heard the report. Are there any corrections or any additions? If not, the report will stand as read. I will appoint a committee later to audit the Treasurer's report.

PRESIDENT'S ANNUAL ADDRESS

G. HALE HARRISON, Berlin, Maryland.

Each year the President is asked to give a few remarks, and of course, it happens to fall to my lot this time. I think all the fruit growers in Maryland and every other state in the United States, should be thankful for the fine financial results we had during 1927. Providence was very

kind to us last year, and I want to say, in my opinion, that these good times came none too soon, because we have had some hard seasons since the freeze-out year of 1921. It has been too much of a hit and miss proposition.

I think that has been clearly demonstrated by the crop of 1926, when we had the largest crop on record, and at the same time, one of the highest quality crops that was ever grown. With high quality fruit and with too much high quality fruit, we were still unable to get the prices. Comparing 1926 results with 1927 results, it clearly demonstrates that what we need is for all fruit growers in the United States to grow less fruit, but be sure that they grow better fruit, and see that a greater percentage of the total production passes U. S. No. 1 grade or better. Practically all the profit we make is made on the apples which are U. S. No. 1 grade. Occasionally on the U. S. No. 2 apples you break even, especially in a year like 1927, but in an average year the U. S. No. 2 grade apples generally show a loss.

I think one factor which has greatly helped the fruit growers of Maryland has been the Federal state inspection at shipping point. I think that the Federal inspection has had two great advantages. In the first place, it has helped to teach each and every grower whether small or large, just what the recognized standards of the U. S. grades are, and we have been able through the advice and the supervision by the Government inspectors, to educate and to teach our labor so they can put up a grade which will meet with the recognized requirements and standards throughout the United States.

Another thing—I think it has made the fruit growers more honest with themselves, because lots of times lots of us thought we were putting up an honest-to-goodness pack, but when some uninterested party looked at it and passed his opinion on it we found we were not quite up to scratch.

I think the Government inspection has had another great advantage. After certificates are issued which state precisely just what the cars contain, it is a great aid to the salesmen in quoting to the trade in the various cities an

exact description of just what the cars are, and by having this Government report we are able to talk to the city buyer in the same language that he can talk to us. In other words, we are on a common level.

Thirdly, from a financial standpoint, I feel that in many, many cases, the amount of money saved, even on one or two cars of fruit in a season, has fully repaid us for the total cost of Government inspection for the whole year. The Government certificates have been a boomerang to the unscrupulous dealer. By having the cars Government inspected it has made many a fellow honor a draft and accept a car at the purchase price who otherwise would positively refuse, and would demand a heavy allowance on the draft.

Baltimore has been taking more fruit from the Eastern Shore of Maryland in the last three or four years than it did in years previous, and I am pleased to note this improvement on the Baltimore market, but hope that it will be still better in the future; although Baltimore is not up to par with some of the other cities as yet. We are anxious to do more business here in our own home city.

Transportation is an important problem to the fruit business, and we only hope on the Eastern Shore that by some means we can get better transportation to Baltimore, and trust that some of the business interests of Baltimore City will see to it that the B. C. and A. Railroad is saved and not allowed to be dismantled. We hope that the Pennsylvania Railroad or the great Baltimore & Ohio System will come to the B. C. and A's. rescue and save a line which is one of the great feeding lines for the main lines on the peninsula. I think it would be well for Baltimore's interest to keep in touch with this matter like they have in the last few weeks, because the Eastern Shore is vitally interested in Baltimore, and Baltimore in the Eastern Shore.

The horticultural interests in Maryland, taking all the groups combined, amounts to many, many millions of dollars a year, and is a much larger interest than the average citizen of Maryland appreciates.

The University of Maryland, at College Park, has been making great strides in recent years. I only hope that some day in the near future that the Legislature of Maryland will appropriate sufficient funds to build a Horticultural Building at the University of Maryland, so that this great industry in this state can be properly represented.

Speaking for 1928, my personal feeling is that I hope throughout the whole United States that we will only have about 50 or 60 per cent. of a normal crop of peaches and apples, because I think if we do we will have good sales, we will make good profits, and have money in the bank and not notes in the bank to show like we did on the 1927 crop.

Next we have an address by Dr. E. C. Auchter, of the University of Maryland, on the subject, "The Importance of Organic Matter in Orcharding."

THE IMPORTANCE OF ORGANIC MATTER IN ORCHARDING

DR. E. C. AUCHTER,
Head Department of Horticulture, University of Maryland, College Park, Maryland.

In order to have satisfactory fruit yields, it is necessary to maintain good growth conditions in the orchard. Thus there should be a good yearly growth of fruit spurs, terminal growth, trunks, branches, and roots. To secure this good yearly growth, all practices of pruning, thinning, spraying, fertilizing, and soil management must be properly performed.

The lack of sufficient water (moisture) and nitrates are often the two big limiting factors in successful tree growth and fruit production in Maryland. Of course, we might enumerate several other factors which are also essential, but water and nitrates appear to be the most important in most cases.

Importance of Water: The great importance of water in tree growth and successful fruit growing cannot be overemphasized. The absolute dependence of the tree's welfare on water can readily be seen from the fact that all

soil foods must first be dissolved in water before they can be taken into the plant. These soil foods, however, do not flow into the plant in a water stream, but their intake depends upon their solubility and their relative concentration within and without the plant. Whenever their concentration is higher in the soil solution than in the plant, they diffuse into the plant. If it was not for water these mineral foods would not be transported up through the plant. Water again is necessary in the formation of the carbohydrates, proteins, fats, etc., and their translocation down from the leaves to all parts of the branches, fruit trunk, and roots. Large amounts of water are likewise transpired daily. Something like 500 pounds of water are transpired for each pound of dry matter produced, and fruits contain from eighty-five to ninety per cent. of water. Such troubles as cracking of fruit, water core, fruit pip, cork drought spot, and die back, are all exaggerated by improper watering relations. Mathematics show that each vigorous mature apple tree will use from fifteen to twenty tons of water per year when it is making a good growth and is producing a good crop.

Importance of Nitrogen: Fertilizer experiments conducted in many different orchards of this state have uniformly shown the great value of nitrogen in peach and apple orchards. When quickly available, nitrogen fertilizers are used, terminal growth, fruit spur growth, and branch and trunk growth are greatly increased. The leaves become larger, and greener, more fruit buds are formed and greater crops result.

Role of Organic Matter: The addition of organic matter to orchard soils either through growing heavier sods in the sod orchard or by turning under heavy cover crops in the cultivated orchard, will influence greatly the water and nitrogen supply for fruit trees. In the handling of orchard soils, we need to conserve moisture, keep up a nitrogen supply, and keep a proper physical condition of the soil. The addition of large amounts of organic matter will greatly aid in doing all of these things.

General farmers have realized for years the value and necessity of having organic matter turned under, but orchard-

ists have not benefited by this experience, and in most places in this state, have allowed the organic matter content of their soils to decrease to such an extent that many of the soils now puddle during rains, or the soils erode and wash badly during winter and bake and crack during summer.

Many of our orchard soils, because of a lack of organic matter, have gradually become unproductive. Fruit spur and terminal growth on the trees is short, the bark becomes tight, the fruit doesn't size up, much of the fruit cracks during summer when dry spells followed by rainy periods occur, die back or rosette appears on the terminals, more top and root injuries occur in winter, and in many cases the addition of nitrogen fertilizers gives very little response.

In such cases, orchardists have pruned harder and thinned the fruit heavier in an attempt to keep up the size and quality of fruit. These practices, which have reduced the number of fruits, and total possible yield per tree, have simply allowed more water and nitrates for each of the fruits left and of course, have improved it to a degree.

It seems to me that such orchardists should immediately turn their attention to getting more organic matter in their soils. It is the only way to permanently improve the soils and prevent the occurrence of such troubles just outlined.

Advantages of Organic Matter

From the moisture standpoint, I like to think of organic matter as a sponge in the soil. The hard, shaley, or clay soils are loosened up and made more porous, so that during rains, the water soaks in instead of running off, and is absorbed by the organic matter. Thus large amounts of water are held in the soil and this is available for the trees gradually during the season. This is especially important in order to keep the fruits growing steadily and normally so that cracking will, to a large extent, be eliminated.

As the organic matter decays in the soil, nitrogen is, of course, liberated and becomes available for the trees. If leguminous cover crops have been used, the soil nitrogen content is considerably increased, while if non-legumes have been used, much of the nitrates, which might have leached

away, are taken up and held by the plant and thus returned to the soil. This means that it will probably be possible to apply smaller amounts of nitrogen carrying fertilizers per tree, and get equally as good results.

When the organic matter decays, carbondioxide is also given off into the soil. This results in a more acid soil solution and more of the plant foods already in the soil are dissolved and made available for the tree's use.

The addition of organic matter improves the physical condition of all soils. As a result, they become better aerated and their bacterial content is increased. Such soils are warmer in winter and cooler in summer, and all conditions for tree growth are improved.

How to Improve the Organic Content of Orchard Soils

Sod Orchards: If orchards are being grown in sod, and the sod is thin and poor, there will be very little organic matter to cut and thus add to the soil. A lime test should be made and lime added if the test shows that lime is needed for improving the growth of the sod. Whatever fertilizers are needed for improving the growth of the sod should be added. This may mean a high grade, complete fertilizer consisting of nitrogen, phosphorous and potassium. The important thing is to grow a heavy sod so that large amounts of organic matter can be cut twice a year and left on the ground to improve the soil.

Cultivated Orchards: In the case of cultivated orchards, the object should be to plow under heavy cover crops yearly. Select the cover crop which will do best under your conditions and make the most organic matter. If legume crops as Soy Beans, cow peas, crimson clover or vetch will thrive and produce large amounts of organic matter, they should be used because of the fact that the nitrogen of the air is fixed by the bacteria in the nodules and thus the nitrogen content of the soil is increased as well as the organic matter content. But remember that a large amount of organic matter is the important thing in order to improve the physical condition of the soil and especially its moisture holding capacity. As a result, if non-legumes as

rye, buckwheat, sorghum, millet, or rape, and cowhorn turnips will produce more organic matter, they should be used, as additional nitrogen can easily and cheaply be added in the form of some quickly available nitrogen carrier. In many parts of this state a mixture of one bushel of rye and ten to fifteen pounds of winter vetch makes a very satisfactory cover crop.

As with the sod orchard, a lime test should be made and lime and fertilizers should be added, if these are necessary, in order to produce a heavy cover crop. Nitrogen, phosphorous and potassium will probably all have to be added on many soils to get a heavy growth of cover crops.

Time of Sowing Cover Crop: Cover crops should be sown much earlier than has been the practice in Maryland. An attempt should be made to have practically all of the growth of the crops completed by November 15th. This means that the cover crop should be seeded from July 15th to August 1st. The cover crop should not be allowed to grow in the spring and compete with the trees for water and nitrates.

It will be recalled that fruit spur growth for the year is completed about two weeks after blossoming, or about May 10th in most parts of the state, and that terminal growth is usually completed about July 15th. It can thus be seen how important it is that nothing competes with the trees early in the season if satisfactory growth is to be attained.

In Maryland, cover crops should be plowed under before April 15th.

The first year that cover crops are sown early (July 15th to August 1st) they may reduce the soil moisture content to such an extent, especially in a dry season as to affect the size of the developing fruit, but the following year and thereafter, the soil moisture content will be so much higher because of the previously turned under organic matter, that the growth of the cover crops will not affect the growth of the fruit adversely except under some unusual drought conditions.

Several orchards in which the soil had become depleted and the trees stunted, have been reinvigorated in this state by following the above practices. After turning under heavy

cover crops for two season, many of the troubles resulting from insufficient moisture were corrected and the trees again responded well in growth and production to application of nitrogen fertilizers

Summary

In order to have satisfactory tree growth and the production of large crops of normally developed, high quality fruit, several essentials are necessary Water and nitrates appear to be two of the most important and limiting factors, however, if these desirable conditions are to be attained.

The addition of large amounts of organic matter to our orchard soils will improve greatly their moisture and nitrogen content and thus increase tree growth and the production of normal high quality fruit.

As a result of increasing the moisture and nitrogen supply through increased organic matter, less pruning, thinning and fertilization will be required to produce good tree growth and large crops of normally developed high quality fruit. The addition of organic matter will also greatly improve the physical condition of all soils, and less washing, puddling and eroding of soils will occur; they will be better aerated, and their bacterial content and productive power will be increased

PRESIDENT HARRISON: This is an important subject, and the discussion will be lead by Mr. G. S. L. Carpenter, of Hancock.

CHAIRMAN CARPENTER: Dr. Auchter has brought up a subject which is of vital interest to every fruit grower in all states. Organic matter seems to be one of the big limiting factors in fruit production. The growers in this and other states have been accustomed to receiving what might be termed biennial crops of apples. They have had high production in low priced years, and a low production in high priced years. This results in very unsatisfactory operating conditions.

Dr. Auchter has shown that annual production is more liable to oocur if desirable growth conditions are obtained. He has shown that organic matter contributes largely and is perhaps the limiting factor in many of our Maryland

orchards in securing these conditions. Organic matter provides a storage of soil moisture by increasing the permeability of the soil to rainfall, and thus conserving all rainfall and preventing its running off. He has shown that the water carries the soil nutrients into the tree, and that it also assists in trans-locating these, and that it assists in the making of carbohydrates. The tree uses large quantities of water in making carbohydrates, and a great quantity of water is transpired through the leaves.

Dr. Auchter has shown that nitrogen is obtained by the use of cover crops, by means of the free fixing bacteria, and by means of the nodules on the roots of leguminous cover crops, and by the rotting of the cover crops and their consequent freeing of nitrogen. He has shown that the present method of obtaining crops of fruit of desirable size is to prune the trees heavily and to thin the fruit heavily. In this way the crops of fruit commercially profitable are secured. He presents the alternative of assisting in securing crops of large size and in both quantity and size, by the use of maximum amounts of organic matter. He gave many illustrations during his discussion which all of us have probably experienced. I know that some of them are very applicable to our own conditions.

Many years ago the growers realized that organic matter was important, and we have with us today two of the growers who might be said to have pioneered in horticulture in Maryland. I am going to ask Senator Harrison to bring to the attention of those present the results that he has observed from the use of organic matter in the soil.

SENATOR HARRISON: We have found from 25 years in orcharding, that organic matter is really needed more and more, and I think the outline that has been given here by Dr. Auchter is a mighty good one, one that we can well afford to take up and follow carefully. I feel that with cover crops properly handled we have been able to, and can grow fruit for very much less money year after year. I think it has come to the point now where we have got to grow better fruit, grow it for less money, for we are at the point

where we are in competition with real good growers over the whole country.

I remember quite well, 22 years ago, I think it was, when I first met Mr. Cohill, who is in the audience this morning, and even then one of the strongest points was alfalfa and clovers of different kinds. I think the younger generation from time to time have overlooked many of the good features laid down by our forefathers in the past as to the importance of keeping up the fertility of our soil. I remember distinctly Mr. Cohill, time and time again, by the fireside, speaking to the boys and myself about the importance of keeping up the fertility of the soil, because if you don't keep up the fertility of the farm where you put in a crop, then there is no profit coming back to you.

That is probably what is the matter with a great many of the orchards today. We have really neglected the cover crops, from time to time, keeping up the actual fertility of our soil.

I think sometimes the orchard people are the most careless of all in keeping up our farms. I believe we are, because you can take two counties south of us on the Eastern Shore, take in Virginia, those people don't think of having crops in rotation of potatoes unless they sow right back to rye. Rye is their principal cover crop there, and they certainly have improved their soil, and in most instances have made something every year.

Now, we have learned this lesson at considerable expense to everybody. Why can't we have fruit growers determine on these important cover crops that have been outlined here? To me, it is one of the real saving propositions.

CHAIRMAN CARPENTER: In Western Maryland we have some of the most difficult soil conditions which it is possible to operate under, and on one of the properties which we are operating we have both good and bad soils. This orchard that we acquired from Mr. E. P. Cohill is of that type. Mr. Cohill is with us today, and knowing that he utilized cover crops to a large extent, we would like to hear from him as to the results he obtained from the use of cover crops. Mr. Cohill.

MR. COHILL: Mr. Chairman and Gentlemen: Really, I think that is a pretty short story. I don't see how you could get along without cover crops on apple orchards.

Dr. Auchter has made a good explanation of what is necessary, and I have listened with a great deal of interest. He certainly has brought out what is necessary to grow fruit, and that is nitrogen. As he says, the balance of the fertilizer we have in our soil—potash and other things.

I'd like to cite an experience that I had with Prof. Close. At that time he was the State Horticulturist. This happened about 22 years ago, I guess. He wanted me to take ten acres of five-year old apple orchard in two acre plots, five plots of two acres each and use different kinds of fertilizers, potash, nitrate of soda, and different kinds; each of the five plots was to have a different kind of fertilizer. We carried this experiment on for six years to see what happened. Something happened before then.

Then I took one acre right on the same ground, the same trees, all alike, and used the same amount of money per acre in stable manure. I figured the cost of stable manure was about $3.00 a ton. I think I paid $1.00 a ton and $1.50 or $2.00 to get it out on the land. Well, in three years my acreage had gone right straight along all the time. I remember one plot, I think they used phosphoric acid and potash on it, and the trees commenced going back after the first two or three years, and those that had the manure got so far ahead in the third year that I said, "Look here, Professor, are you going to pay for these other trees?"

Mr. Carpenter, right back of where I used to live there are some old York Imperial trees, about five of them, I think. When we bought the place they were about ten years old, and had been bearing apples every other year. We covered the ground under those trees every year with stable manure, and had fruit every year. They had good crops on every year. So you can see the importance of organic matter with fertilizer.

CHAIRMAN CARPENTER: Mr. Cohill has brought out several important points. The use of stable manure is very desirable in that it does add large amounts of organic mat-

ter to the soil as well as nitrogen, and it is very desirable for fruit growers to use it where it is obtainable at an economical price. At the present time, however, it is very difficult to obtain satisfactorily for use in orchards. I think Mr. Cohill could have stated that where he received the best results from cover crop growth in the orchard, that in that location he also received the best production of apples. I know that holds good today.

MR. COHILL: Yes, that's right.

CHAIRMAN CARPENTER: Commenting further on Mr. Cohill's remarks, he brought to our attention the fact that any cover crop which will produce a maximum amount of organic matter is the one that you should use under your conditions. All conditions are not the same.

Dr. Anthony has done considerable work with the obtaining of maximum amounts of organic matter in the soil, and I am going to ask him in particular to give us the benefit of his observations on a sweet clover permanent cover crop which was grown in the State of Delaware and which he observed under growing conditions this summer.

DR. ANTHONY: Mr. Chairman, that is a subject I can get warmed up on very easily, and I won't need an overcoat.

The question of organic content of the soil has always been my particular hobby. I have several hobbies, but I think that is my particular hobby as far as orchard work goes.

Before I say anything about this orchard Mr. Carpenter has spoken of, let me say a word about some of our work at the college. We have three different series of experiments there all laid out for different purposes, all combining different systems of management and fertilizer experiments, and when you take them altogether they all have only one answer, and that is the importance of organic content in the fertility of the soil. We come at it a dozen different ways, and it comes out all the same. Whenever you keep up the organic content of your soil, your trees are all right.

raises it I suppose, on an average of ten inches. If you cut it once or twice that way it comes ahead, and if you have rain, of course, you have a tremendous growth,

I don't thing it's necessary to have the seed scarified. It comes up all right.

I want to ask Dr. Auchter if he is talking about turning all these crops under, where you have these large orchards, whether just disking would not be just as good.

DR. AUCHTER: It depends on the nature of the soil. If it is shallow, hard, soil like we have in Western Maryland, I don't believe disking is satisfactory. As you know, the soils are very hard and rocky and the roots don't get a chance to go down, and by constant disking you only have three or four inches up on top. By plowing deeper you get three times as much bulk of soil and organic matter, to hold moisture. In some of the deeper, heavier soils, or in some of the sandier soils, I think disking turns it under very good.

MR. MILLER, OF INWOOD, W. VA.: This subject has been treated from almost every angle, it seems to me, in a most intelligent manner. I have come 100 miles to hear Dr. Auchter make this address, and if I go back on the next train, I will feel mighty well repaid for making the trip.

There is one point, however, one condition that I haven't heard discussed that we are up against. A few years ago practically all the orchards were double planted. We are cursed with entirely too many trees today. When trees are planted 18 feet apart each way and the trees have made a good growth, I just want to ask the question if anybody knows how you can raise legumes in an orchard of that kind. The shade is so dense that no legume that I know of will grow and make a satisfactory growth, and I don't know of any implement of any kind that will put it in there and cut it or cultivate it.

PRESIDENT HARRISON: You will have to cut out half the trees, Mr. Miller.

MR. MILLER: Yes, something like John Miller did in 1926. He has a ninety acre orchard over there that had been double planted both ways, the trees being 18 feet apart each way,

Transparents and Duchess. He went in and picked three or four carloads of these Transparents. The fruit went right down to the ground. He said to his men, "Put down your picking baskets and get your axes." He went in there and cut those trees out just loaded with apples.

That is one condition that hasn't been brought out. I am going home and I am going to try to fix up our orchard. That is what I am suffering from.

PRESIDENT HARRISON: Use your ax.

MR. MILLER: I don't know. I just wanted to get a little advice as to what would be the best thing for me to do. We have made money out of the orchard business up to this time, but we have got into a place where there is a turn in the road. Our trees are not making satisfactory growth, and our fruit is small in the dry season. Pruning doesn't seem to cut it down. I suppose maybe thinning would help. How about that, Dr. Anthony?

DR. ANTHONY: I think your thinning has got to be done with the ax.

CHAIRMAN CARPENTER: Mr. Miller's question was—is it possible to satisfactorily put organic matter into the soil in trees closely planted? Dr. Auchter, will you answer that?

DR. AUCHTER: I don't think it is, Mr. Miller. I think Senator Harrison and Dr. Anthony have given you a pretty good suggestion, although I didn't hear your details. How old did you say this apple orchard is?

MR. MILLER: Fourteen or fifteen years.

DR. AUCHTER: And it is planted out how far apart?

MR. MILLER: Eighteen feet.

DR. AUCHTER: I don't believe you will be able to grow a cover crop in that orchard that will do you much good until you thin out half the trees. That is the only thing to do.

MR. O'CONNOR: About six years ago I went to the New York Convention at Rochester, New York. There I saw an orchard in the same condition Mr. Miller speaks of. They took out every other tree, leaving the trees about 36 feet apart. Last year I had occasion to go up in the same neighborhood, and I saw the trees then. The results were so

satisfactory that it more than paid him for the trouble of getting these trees out. He saved labor in picking and handling, and he also got fertility into his soil, which was needed. As Dr. Auchter says, without humus we have nothing to go on.

PRESIDENT HARRISON: You can get more tons of cover crop for the amount of money invested in sorghum than anything else to turn under. We cut it down in the fall and plow it about the first of December.

QUESTION: About what height is it?

PRESIDENT HARRISON: This sorghum we cut was about six feet. some of it ran as high as eight feet.

MR. ALBERT ALLEN: If you have amounts of organic matter added to the soil, would they constitute a means of securing annual production?

CHAIRMAN CARPENTER: In answer to that, I feel that only in relation to the other practices would this have an influenece on annual production. Dr. Auchter has mentioned many, many times the inter-relation of practices which are necessary to help secure annual production, and the point that I wanted to stress was this—that probably the limiting factor under most conditions in the securing of annual production, is organic matter. But it must be related to the other practices that are necessary.

PRESIDENT HARRISON: We have a friend with us from a neighboring state, the State College of Pennsylvania. We'd like to hear from Dr. R. D. Anthony on "The Construction and Management of Common Storages for Fruits and Vegetables."

CONSTRUCTION AND MANAGEMENT OF COMMON STORAGES FOR FRUITS AND VEGETABLES

R. D. ANTHONY,
Pennsylvania State College, State College, Pa.

Before discussing the construction and management of the common storage it would seem wise to consider the probable value of such storages in Maryland. We have two ways of estimating the future use of such storages: one is to study the experience in other states having similar condi-

tions, and the other is to find if any growers in your own territory have built such cellars and what their experience has been.

I will try today, to tell you something of the experience of Pennsylvania with such storages. Our growers can be divided into two very distinct groups according to whether they market their fruit in car lots, on a distinct market, or dispose of it in small amounts on a local market. Only a few of the first group have been interested in the common storage and these usually to meet special conditions so we may dismiss this group from our discussion at present. Successful local marketing of fruit requires that the grower should have a supply of fruit in his immediate possession throughout the entire marketing season. This means that he must have some sort of storage. Cold storage on the farm has been too expensive, and the use of commercial cold storages is usually too inconvenient as well as expensive. Consequently, our local market growers have been intensely interested in the common storage.

About fifteen years ago, a man in north-central Pennsylvania built a bank cellar to store apples and potatoes. It was a very well built cellar, but much to his surprise apples and potatoes did not keep well in it. The failure of this storage has proved of great value to the fruit and vegetable growers of our state, because it led this man to resolve that he would find out why his cellar did not work As a result, the Marble Laboratory was organized at Canton by Mr. L. M. Marble, to study storage problems. Since then, two research storages of commercial size have been built at Canton, together with several smaller rooms where the temperature, humidity and ventilation could be controlled. For several years the work at Canton has been in coöperation with the Department of Horticulture at State College. Two storages have also been constructed at State College. It is safe to say that the satisfactory results at Canton have led to the construction of more than a hundred common storages in Pennsylvania, and the remodeling of more than that number of bank barns into storages.

Have these storages been successful? I have still to hear of a single one that has not been satisfactory when it was properly constructed and efficiently handled. Most of them have paid for themselves in the first three years or in less time. Why have they been successful? They have permitted our growers to keep potatoes to planting time in the spring in perfect condition or to store table stock until the fall glut had passed and prices had advanced substantially.

The first crop stored in one of our storages at the College paid for the storage, as the selling price was a dollar a bushel higher than the price at digging time. These storages have enabled our fruit growers to place good apples in their markets throughout the commercial season and thus hold these profitable markets from their competitors, and they have made it possible to store the fruit on the farm where it could be most economically handled. The use of these storages has permitted many growers to spend six months growing a crop and six months selling it. A twelve month job is usually more profitable than one of half that time.

Are these results possible in Maryland? What conditions would be different in Maryland than in Pennsylvania? Western Maryland has practically the same climate as the adjoining Pennsylvania counties. Your western shore in the vicinity of Baltimore is probably 2 to 4 degrees warmer than our Philadelphia region and your winter season 2 to 3 weeks shorter. We have successful storages in southeastern Pennsylvania within 10 miles of the Maryland border. Our results at Canton lead us to believe that 4 degrees difference in storage temperature will not materially change the keeping quality of apples or potatoes though it will shorten the season somewhat. We have kept apples successfully at a temperature of 44 degrees throughout the winter. Until I know the conditions more thoroughly than I do now, I would not want to predict anything about the success of the common storage on the Eastern Shore.

Let us now take up the question of storage construction. There are two kinds of common storage: those sunk into the ground to such an extent that at least half of their wall space is covered with earth, and those which are entirely

above ground. Earth temperatures fluctuate slowly and change gradually from season to season. A storage sunk into the ground will have a temperature between that of the average of the air and the average of the ground temperature, usually closer to the ground temperature than to the air. In the fall and spring such a storage is cooler than the air and in the winter it is warmer. When the ground temperature at 15 inches is about 36 degrees, large amounts of air as cold as 20 degrees can be admitted to a bank cellar without lowering its temperature below 32.

When a storage is built above ground but with an uncovered dirt floor, there is still a considerable temperature influence from the earth but not as much as with the bank cellar. Consequently, more care must be exercised with the above ground storage in letting any considerable quantity of very warm or very cold air into the storage.

All walls in both types of storages exposed to the outside air must be insulated. Insulations must be more complete with the above ground storage because the ground temperature does not help as much to hold it uniform. We have found the most satisfactory and cheapest wall to be one of wood with 2 x 6 studding, faced outside and inside with waterproof paper and tight wood sheathing, and having the six-inch space between the sheathing filled with granulated cork. Such a wall should rest on a concrete sill raised about 12 inches above the ground. Walls which are to be earth banked may be either concrete or stone. If the storage is to be at least three-fourths banked it may be built entirely of concrete with reinforced concrete roof, and a building above that or with two to three feet of dirt over the roof. With ordinary labor it is easier to build a wood roof, using an "A" roof with 2 x 4 or 2 x 6 joists laid on the plates to carry the ceiling, and with at least 4 inches of granulated cork on the ceiling.

Next to the insulation, the most important point in the construction of the common storage is the doors. An apple stored at 36 to 38 degrees is respiring much more rapidly than one stored at 31, and, if the products of respiration are not removed by a draft of fresh air over the fruit, the skin

will die and the apple will become scalded. We secure this air movement in the common storage by having large doors, in each end if possible, and by storing the fruit in open crates. An eight-foot door is best. If a door can be placed in only one end, a ventilating shaft four feet square at the other end will be worthwhile. Except for this, we have not found the use of side-wall or ceiling ventilators of any value.

The dimensions of a storage, of course, depend on the desired capacity. An eight-foot driveway the entire length makes it more economical to handle. It is wise to plan on a clear height of 11 to 12 feet in order to secure the greatest capacity at the least cost.

A third very important point in the construction of the common storage is the use of a dirt floor. The use of a concrete floor invariably causes fruits and vegetables to wilt. A humidity of at least 90% is desirable. A moist earth floor will usually maintain this humidity if the ventilation is not excessive. It is well to locate the storage where there will be enough seepage to keep the floor moist but not muddy.

The Pennsylvania State College has a bulletin discussing the construction and operation of both the above ground and the bank cellar, and giving the list of materials needed. The supply is rather limited, but if you are interested you can at least secure the loan of this bulletin through Dr. Auchter.

The management of the common storage is simple, yet it requires some attention and some thought. It should be kept in mind that the humidity will be lowered by increasing the ventilation and will be built up by shutting the doors. If there is too much ventilation potatoes and apples will wilt; if there is too little ventilation apples will scald and potatoes rot. The right degree differs with *each storage* and can only be determined by study.

The use of a tight package in the common storage is certain to result in disaster. Also the use of large bins or of tight stacks placed directly on the ground. A false floor with slatted crates stacked a few inches from the wall permits the needed ventilation.

There are very definite limits to the storage season of each variety in the common storage and sales should be so managed that each variety is cleaned out while still in prime condition.

With us in Pennsylvania, the common storage has become a definite and very valuable part of our local marketing system. I can see no reason why this should not be the case in many places in Maryland.

PRESIDENT HARRISON: Dr. Anthony, which type do you find keeps better storage, the below ground type or the above ground type?

DR. ANTHONY: As far as keeping the fruit is concerned, there is practically no difference between the above ground storage and the bank cellar—in fact, so little difference that Mr. Marble says he prefers the above ground storage, and I prefer the bank cellar. It is a toss-up between the two.

The above ground storage is not quite as cold as the bank cellar.—For instance, on a day like New Year's Day, with a very high wind and a very low temperature, supposing you decided you'd go to Atlantic City for the holidays, and you go away and leave the door open, or a window open. In the above ground storage it will freeze up, and in the bank cellar you can forget the window and it will pull through in pretty good shape. So the above ground storage is not as foolproof as the bank cellar, but one will keep just as well as the other when properly handled.

MR. HEAPS: I have just turned my old banked cow stable into a common storage. It isn't completed yet. But I am worried a little bit about the rats.

DR. ANTHONY: I think the rat is one of the biggest problems in storage. I have known them to spoil 20 or 30 bushels of apples before they were caught, and they always go into the last crates in storage. I never knew it to fail. We have found that the use of galvanized wire screen is a big help in remodeling the old bank barns.

In remodeling those, wherever there is hay and grain up above, sheet the underside of the floor joists with galvanized wire, hardware cloth. That will keep the rats out pretty well. Then put a cat in and keep her there all the

time. Also put screen doors at all outside doors, or at any opening. Have a screen door with a spring on so it will always be closed.

MR. LEE ALLEN: In the territory where the main problem would not be to keep out the frost, but to get your temperature low enough in the fall, do you think it would be advisable to buy a ton or a half ton of ice and put it in the storage before hauling in your crop?

DR. ANTHONY: If I had any thought at all of using ice, I would use it in the above ground storage. The same ground that acts as a temperature regulator and keeps the frost out also steals the cold from your storage when you put ice in.

PRESIDENT HARRISON: Are there any other questions?

Dr. Anthony's remarks were very interesting, and I am sure a lot of people will be interested in putting in some storages at some time.

I'd like to give the list of committees;

Nominating Committee

MR. A. L. TOWSON
MR. FRANK HANSON
MR. EDWIN P. COHILL
MR. G. S. L. CARPENTER
MR. O. HARRISON
MR. J. H. WILCOX
MR. J. P. BURDETTE

Resolutions Committee

MR. W. LEE ALLEN
MR. PAUL WILLARD
MR. W. H. LONG

Auditing Committee

MR. J. ANDREW COHILL
MR. E. D. MCCAIN

We will adjourn until a quarter of two.

TUESDAY AFTERNOON

January 3, 1928

The second session convened at two o'clock, President Harrison presiding.

PRESIDENT HARRISON: The meeting will come to order. Mr. R. R. Pailthorpe, of the U. S. Department of Agriculture, will talk on "How Satisfactory were the U. S. Grades for Apples and Peaches."

HOW SATISFACTORY WERE THE U. S. GRADES FOR APPLES AND PEACHES

R. R. PAILTHORPE,
U. S. Department of Agriculture.

Our growers have not packed the fancy grade commercially. A few have been packed, but not as a commercial proposition at all. Growers have packed U. S. No. 1 mainly, and in certain years like last year, when apples were very plentiful, there were practically no U. S. No. 2 apples packed because there were enough U. S. No. 1 apples to meet the demand that year. No. 2's went for cider, etc.

After we changed the grade this year and allowed apples which were not quite full color, we thought perhaps the growers would pack them fancy, but I question whether any more growers have than the previous years. We have allowed more blemishes on the Fancy, and providing an apple has plenty of color it can have minor blemishes and yet be accepted. It is a fact that people will accept those apples as long as the defects are very minor and not at all serious.

Now, what do the growers do? They take their No. 1 and Fancy apples and pack them together. That is a common practice throughout the East, and as a result of that—here is the seriousness of the whole thing, one man who has an orchard of apples, practically all of which have blemishes and which would not be allowed on Fancy, would pack

them under U. S. No. 1. But say the minimum color requirements on U. S. No. 1 York, for instance, would be 15 per cent. of good color. In that barrel we will find in some orchards a man packing with his stuff running 50, 75, up to 100 per cent. color, with no poor stuff in No. 1 at all, and Branded as U. S. No. 1. Anybody buying a barrel like that would be very much pleased with it.

Another grower comes along, and he will pack up U. S. No. 1, and he has no high-grade apples, so he will just put in the minimum or silghtly above. You buy his barrel of apples, and you are disappointed with it, especially if you had the other barrel. In other words, you'd find quite a difference in U. S. No. 1 barrels of apples, which, to my mind, is not a satisfactory condition.

What is the solution? In the first place, if the growers are only equipped as a general thing to pack one grade of apples, I think that is all wrong. In other words, they take everything above No. 2 and put it in a barrel and get it on the market as fast as they can and sell it. As long as you do that you haven't got uniformity in your barrels. It means in many cases that before a man is going to put his money into your apples he is going to see them, and that isn't satisfactory. The idea of standardization is to be able to sell on grades over the wire and not have to see the apples.

If growers would take their Fancy apples and pack them separately, and then put U. S. No. 1, the apples which will not meet the Fancy grade, I think we would not get the wide variation in colors in No. 1 that we now get, although there will be quite a bit as long as our minimum color reqiurements are as low as they are.

In the Northwest, where they pack boxed apples, I question whether we will ever find more than 15 per cent. difference between a box of Extra Fancy or a box of Fancy. Why is it? Because they grade for color. They only have three grades, and for a good many years they only shipped the two. But their minimum requirement for Fancy is higher than ours for Fancy, and their Extra Fancy is higher than our Extra Fancy. Their minimum requirements for the Fancy is their second grade higher than our U. S. No.1.

As a usual thing, when a man buys Fancy apples out there he never stops to think of what he is going to get, as they have very uniform colors throughout the pack.

We have another condition; it seems to me we would make a step in getting along toward uniform color in our package by the use of the basket which is coming very extensively into use. A consumer going down to buy a bushel of apples likes to look at it, and when I go down to buy a bushel of apples, I like to look at them. But when I get the apples home I don't want to find that some of them haven't any color, and some have 100 per cent. of color, and some of them about half. If I bought a basket of apples, and looked at the top and found they were well colored, and saw another basket that was not so well colored, maybe a fourth colored, and it was up to me to say which I wanted, I'd pay the price and get those well colored. If I got them home and found they were the same throughout the basket, I'd be satisfied with whichever one I bought, and I believe that is the average consumer's viewpoint.

In the Northwest they have put up a combination grade, and that has been brought out in the barrel apple. Combined grades would help somewhat. It would mean that a man could put on his barrel "Combination U. S. Fancy and U. S. No. 1," providing 25 per cent. of the apples in the barrel were Fancy apples. You'd at least know that when you were buying a combination of Fancy and No. 1 that you had 25 per cent. of Fancy apples. You have a variation, but it gives you a better idea of what you are buying than just buying U. S. No. 1 and not knowing how many Fancies are in there, or if there are any Fancies in there. That has been thought about some.

There is one other grade I want to talk about, and that is the U. S. Commercial. This grade was gotten out two years ago. Before we had this grade clean apples that were frequently defective in color went into the No. 2 grades with apples which had rather serious blemishes. A great many growers rejected that. It was plain that an apple was clean or it didn't have color, but it was better than an apple which might have fair color, but had a whole lot

of blemishes on it, which would go in the No. 2 grade. So the U. S. Commercial was promulgated. This grade requires that the grades of apples must be the same as U. S. No. 1 except for color.

You will find people packing different kinds of Commercial. It is probably best to cite an instance from a distance by bringing up Virginia. In the early part of the season growers contracted to sell U. S. No. 1 at a certain price. The season opened up, and they had poor color. So those growers who had sold their apples on the basis of of U. S. No. 1 thought it out, and those with color went as U. S. No. 1, and the rest of them went as Commercial. Most of them are holding them rather than selling them for that, however. The market kept going up, and going up, and going up, and the color didn't get much better, and the buyers would come in and say, "What can I buy your U. S. No. 1's for?"

"Why, you can't get my U. S. No. 1's. I haven't got enough to pack."

So a great many growers sold their U. S. Commercial, leaving the No. 2's out, for as good a price as these early sellers got for U. S. No. 1.

Well, that was unsatisfactory, and the question was raised as to whether it was ever intended that when a man packed Commercial he should take out the No. 1's. The question wasn't thought of when the grade was made; in fact, it should be made definite in the future whether a man can take out Fancy and No. 1's and sell the rest as Commercial—in other words, to say we haven't got the Commercial grade which is much more uniform than U. S. No. 1 can be.

There is one other point I want to mention, and that is the U. S. grades can be improved if growers will mark the maximum and minimum on the barrel. Of course, you know the requirement at the present time is that just the minimum size be marked. When people are buying apples they have an idea that they want large apples, or medium-sized apples, or small apples, but they don't know what they are getting when they buy No. 2 with a 2¼ minimum.

You might have a few 2½-inch apples in there, and the rest may be 3 inches, and the man may want to buy 2½-inch apples, or he might want to buy 2¼-inch apples. But if the range is put on, both maximum and minimum, it will give him a better idea of what he is purchasing. Certain markets in Europe, in fact most of the markets there, want small apples. Some of the growers pack 2¼ minimum, but when you run that into 3-inch apples on those fellows, they are disappointed and sore. They claim you are a bunch of crooks. In this country if a man was buying 2¼-inch apples, and he got 3-inch apples, he'd be very much pleased. More people would be pleased in this country than disappointed. Across the ocean it is just the other way around. They want the small apple.

These are the things I wanted to discuss today, and I will be very glad to answer any questions if I can.

MR. WILCOX: On the U. S. No. 1 grade which is usually put in baskets used in this country, the color requirement is perfectly clear, I think, to most growers, but on the 2¼ to 2¾-inch apples for export you said we didn't get high enough color. Wouldn't it be better to have a special export grade with slightly lower requirements in color? Anything above Commercial should be required to have some color, but not quite as high as No. 1, 2½ and 2¾ York Apples.

MR. PAILTHORPE: They are more particular on color than we are in this country. It is an opinion that people here have, but they want color over there on apples.

PRESIDENT HARRISON: This past summer down on the Delaware Eastern Shore they had quite an argument about Yellow Transparents on U. S. No. 1 grade and U. S. Commercial. It seems as if some inspectors were sort of mixed up on that proposition as to just what was the determining factor between U. S. No. 1 and U. S. Commercial on green and Yellow Transparent apples.

MR. PAILTHORPE: Any time a Transparent can be packed and shipped without shriveling it can go as U. S. No. 1, but when it is so green it is going to shrivel before it gets on the market or into consumption in the normal time, say

a week or ten days, it would have to be considered U. S. Commercial.

PRESIDENT HARRISON: As far as I know, that was the only variety on which there was any argument this past season about the grades.

MR. PAILTHORPE: That is the only one I heard of.

MR. ALLEN: What percentage of Fancy apples do you think a bunch of apples should have before a grower would be justified in separating the Fancy from the U. S. No. 1? What I have in mind there is that you sell a car of apples that is U. S. No. 1, and they run a pretty good grade of U. S. No. 1, you might get them through even on a declining market, that is the sale at the F. O. B. price, but if they don't run a pretty good grade down near the minimum color requirement you couldn't get them through on a climbing market. I'd like your opinion on that.

MR. PAILTHORPE: I can't asnwer your question definitely, but in the Northwest in a crop it will probably run 25 per cent. top grade. There is no question in my mind that if they do take these Fancies out of the No. 1's, they are going to be worth less money. But it seems to me that is the ideal you have got to work for. We have got to pack apples that are uniform, that is, within not too wide a range. As I said, at the present time the packers aren't doing it, but until we do do it, people are not going to be satisfied with our barrel and basket packs the way they are with the box packs of the Northwest.

PRESIDENT HARRISON: Why not have Maryland adopt the U. S. No. 1 grade? That's what we all have to sell on anyway. Most of our business is interstate, and not intrastate.

DR. SYMONS: That's what we have attempted to do, but we have no money available for inspection purposes.

MR. PAILTHORPE: You have already adopted the U. S. grades in this state.

PRESIDENT HARRISON: Yes, but the old law is still on the books.

DR. SYMONS: But it is not mandatory.

MR. PAILTHORPE: No, it isn't.

PRESIDENT HARRISON: I'd like to hear from Senator Harrison on the grades and the law.

SENATOR HARRISON: I don't see where it would make any improvement on the U. S. standard—in other words, why shouldn't every state be on as near a uniform basis as possible? First we had inspection on the point of destination, then we had inspection at the packing place, with men standing over the graders: then we are really getting down to a practical proposition. I don't see where the Government should have one law, Maryland another law, and another state a different law. Why can't we all use as near the U. S. grades as possible? I don't see where we can improve on them. We have got to sell under the high standard grades. In other words, we propose to have our fruit graded by these people under their supervision. Why can't we all have one grade as near as possible?

I think so far as grading goes, it is a fine thing, and it is working better and better all the time. If the apples don't belong in one grade, they can go in another. You can sell and collect for the grade you really put up, and then you are selling something that the man knows what he is buying, and then you collect for it. We made a big step ahead in using the U. S. grades.

MR. PAILTHORPE: They have a very interesting exhibit in New York State or have in past years, by the Horticultural Society, and they are going to have another one this year. The State Department of Agriculture gets permission from the growers to go out into the storages this time of year and select a barrel of their apples and bring them in and exhibit them at the State Horticultural meeting. They obliterate the names and addresses from the barrels, but the grade is left stamped on, and they are all brought into a display room. They probably have 50 or 60 barrels, and that means packs from fifty or sixty different growers. They are put in the display room, opened up, sorted out, and regraded, and it just shows to any one that is interested, the percentage of people that hit the grade, and the percentage that don't hit the grade, and how far from the grade they miss. It is a very educational exhibit.

PRESIDENT HARRISON: I'd like to hear from Mr. Carpenter, of the American Fruit Growers.

MR. CARPENTER: We are particularly interested in Mr. Pailthorpe's remarks as regards the uniformity of the various grades. At the present time, as he pointed out, there can be a very great variation in the U. S. No. 1. There can also be a very great variation in the U. S. Commercial. It does not need a dishonest grower to make that variation, but it seems to us that steps should be taken to remedy that situation and place our product on a merchandiseable basis so that the purchaser, buying a package of apples by grade, does know exactly what he is going to receive. I think it is in the interests of every grower to do everything possible to bring that about. The present U. S. grades are splendid, but it seems to us that any effort that we can make toward securing a uniformity of the grade is one that every one should bend his efforts toward securing.

MR. PAILTHORPE: That would mean your packing house equipment would have to be changed from what you are using at the present time.

MR. CARPENTER: Personally, I feel the sooner we do it, the more stable our industry is going to be.

MR. COHILL: Do you recommend more grades?

MR. PAILTHORPE: No, I don't want to see more grades. We have enough now.

MR. COHILL: Any objection to putting out U. S. Commercial and a specific amount of color for U. S. No. 1?

MR. PAILTHORPE: You mean maximum and minimum color? Yes, but I don't want you to have 15 up to 100 per cent. when you do it. I don't want you to quote 15 to 100 per cent. color when you do it and have a big, wide range in there.

MR. COHILL: The inspector informs you as to the average percentage of color.

MR. PAILTHORPE: That is true where you have shipping point inspection, but I am thinking of the 17 states which have adopted them, and like New York State, does very little on shipping point inspection. Their packing is done mainly out of storage in the winter. Their stuff is in storage,

and some of it is repacked and sold later. Your stuff goes into consumption early, and you have no storages handy to shipping points, and you want that stuff inspected before it goes into storage. It is customary to inspect stuff down here at the time it is packed, at the time it is harvested, but up there that is not the custom.

MR. COHILL: I have been sitting here and listening to this with a great deal of interest. I remember what a terrible time we had in the Department years ago to get inspection at point of shipment, and without inspection at the point of shipment we couldn't see much to it. I want to congratulate the Department, and commend them for the progress that they have been making since I was shipping apples.

PRESIDENT HARRISON: We have all heard a lot about box apples. Some of the Maryland growers in recent years have started packing box apples on a carload lot basis. We'd like to hear from Mr. A. F. Mason, of the University of Maryland, on the subject "Points to be Considered in the Proper Packing of a Box of Apples," together with a demonstration. Mr. Mason.

POINTS TO BE CONSIDERED IN THE PROPER PACKING OF A BOX OF APPLES

A. F. MASON, College Park, Maryland.

Mr. Chairman and Friends:

We have a good deal of talent here this afternoon, and what little I know about box packing can well be supplemented by some of the authorities on the subject who are present. Mr. Pailthorpe is here, and we have also a man who was supposed to give this talk before they called on me,—Mr. Smith,—who organized and put into operation packing houses for the American Fruit Growers out in Western Maryland. He packed about 40,000 boxes out there. So I hope these two men, and Mr. Hanson and his son, and the rest of you who have done some packing, will be prompt in speaking up and adding to or correcting the things that I may say.

In packing box apples, it is assumed that we have apples worthy of box packing. It is very easy to see that a grade of fruit that isn't exceptionally good won't pay for an expensive package, particularly during the last few years when we have been producing apples on a small margin. It also assumes that we have a market in which it would be more profitable to sell boxed apples than it will to sell barrel or basket apples. It also assumes that we have provided ourselves with the necessary equipment, such as boxes, lining paper, wrapping paper, packing tables, hods, lid-press, essential to boxing fruit. A good discussion of all these may be found in Farmers' Bulletin 1457, by Messrs. R. R. Pailthorpe and F. S. Kinsey. So we will start, assuming that all these things have been taken into consideration, and we want the boxed apples.

Box packing is an easy, simple operation after one has packed a few days and has gotten into the swing of the thing.

To put up a good pack, we must have fruit that is fairly evenly sized, particularly when learning the operation. The experienced packer can take orchard run stock and turn out beautiful packs, sometimes packing as many as three or four boxes at the same time, having the boxes side by side, and putting each apple in the proper box. The man who hasn't packed a great deal will watch each individual apple as he picks it up, whlie the man who has had experience knows by the feel into which box it goes. So, while learning, it will be better to size the fruit. You can pack more rapidly from well sized fruit. There are many styles of sizing machines, and some of them size quite accurately. A machine that will divide fruit into three or four sizes is desirable, because then one can pack perhaps two sizes from each bin.

If a sizing machine is unavailable, the sizing can be done on a slightly sloping table, or from a bin. Sizing could be done from a level packing table, but it isn't very desirable for that purpose. A padded table, sloping gently toward the operator, is better both for sizing and packing. The sorters size the fruit, putting each size in crates or baskets

and when full these are emptied on the proper packing tables from which the boxes will be packed. A packing table of this level type isn't altogether the best. If it were slanting the apples would have a tendency to roll toward the operator and he wouldn't have to reach out to the far corners for the fruit. Two men can pack from this table very nicely, one using each side. In case a packer is a "southpaw," he would need to have the boards supporting the box placed on the opposite end so he could have his left hand next to the table.

A good many men are somewhat disturbed by the thought of having to wrap fruit. Wrapping is a simple operation. It is something that comes with a little practice. There are several different styles of wraps. Any wrap which can be made quickly, which covers the apple completely, and which leaves a smooth, neat surface exposed, and no "flag" ends hanging out, is satisfactory. I will describe one in detail.

The first is the roll-wrap. The wraps are in the holder, glazed side up. The paper is taken in the left hand, the thumb well under the corner, and the center of the paper coming over the palm of the hand. The apple is picked up by the right hand, thrown forcibly into the center of the paper, cheek up and stem toward the thumb. Holding the apple *loosely,* the left thumb carries one corner of the paper over the stem end, while the left fingers bring the rest of the ends up. The ends of the paper, fingers of the left hand and all are grasped by the right hand, and the left hand, still holding the apple, is twisted about to knot the ends of the paper into a loose roll. As this last motion is done, the apple, still held loosely in the left hand, is slid off of the unfolding palm of the right, down into the box, depositing the apple on its cheek, stem toward the lower end of the box. The loose paper ends are under the apple and are held in place by its weight. The right hand, meanwhile seeks another apple from the table.

This method of wrapping has but three motions, and only two changes of direction when done properly, and lends itself to great speed. It is used widely in wrapping

oranges as well as apples. The ends of the paper are well hidden. If the packer wears a soft rubber thumb stole it will facilitate picking up the paper.

Another wrap largely used by apple packers, is described in Farmers' Bulletin, 1457 "Packing Apples in Boxes," which may be obtained from Superintendent of Documents, Government Printing Office, Washington, D. C.

Putting the fruit into the box requires just a slight amount of skill. We must know in the first place what size of apples are to be packed before we can determine whether we are going to pack a 2-2 or 3-2 pack. The only point which determines this is the size of the apple. If the apples are of such a size that the box is more than three and one-half apples wide, we must make a 3-2 pack. One couldn't make a 2-2 pack out of these because the apples wouldn't fill the box. Therefore, we have to make a 3-2 pack. The apples decide that for you.

Apples of ordinary size will fall into either the 3-2 or 2-2 packs. We will discuss these two.

The 2-2 Pack

The 2-2 pack is started by placing an apple in one corner of the box and the next apple midway between the corner and the opposite side. A third apple is placed between apple number two and the side of the box, while the four apple is laid between apples No. 1 and No. 2. A fifth apple is placed between apple No. 3 and apple No. 4, while a sixth apple is placed between apple No. 5 and the side of the box. This is a diagonal row completed. This first diagonal row should be perfectly even and straight. Slightly shifting apple No. 2 to either the right or left will enable the packer to straighten this row. Thus the second apple is the most important one in the 2-2 pack. Additional diagonal rows are added until the bottom is filled, taking care to keep each diagonal row perfectly straight. All apples should have been placed in position loosely. When the lower layer is filled except for the last two apples, the whole layer is firmed by drawing down on the top of the layer, and the last apples added to the layer in their respective

positions. There should always be an even number of apples in each layer of a 2-2 pack.

The second layer is started by placing an apple over the spaces between apples No. 1 and No. 2, and No. 2 and the side of the box. Additional apples are then added, the apples in the second layer always falling over the interslices between the apples in the first layer. The third layer is identical with the first, and the fourth layer to the second. If the apples are of even size, and the diagonal rows have been kept stright, the box will always come out right. If it is too full, and only apples of uniform size have been used, then it is a sign that the first layer has been firmed too tightly. The box should be repacked with 2 less apples in each layer.

The 3-2 Pack

In packing the 3-2 pack the first two apples are placed in the corners and the third midway between them. The fourth apple is placed between No. 1 and No. 3, and the fifth between No. 2 and No. 3. Diagonal rows are then built up as in the 2-2 pack. Note again that shifting apple No. 3 to the right or left changes the entire diagonal row. It is essential that this first diagonal row, as well as succeeding ones be straight. When one approaches the completion of the first layer it is firmed as in the 2-2 pack In the second layer the first two apples are placed over the spaces between apples No. 1 and No. 3 and No. 2 and No. 3 in the layer beneath.

The third, fourth, and fifth apples of the second layer are then placed over the interslices between the fourth and fifth apples and the sides of the box. Thereafter diagonal rows are completed as heretofore described. The third and fifth layers are similar to the first, and the fourth layer is similar to the second.

The Bulge

The box must have a good bulge to be marketable. This bulge is high or low, depending on how tight the first layer is packed. The apples should rise from ¼ to ⅜ inches above the edges of the box at the ends, and about 1½ inches

above at the center. When the lid is put on about half of this bulge is taken up by the bottom of the box, so that the bulge amounts to about ¾ inch on both top and bottom. There should also be a slight bulge on the pack across the box, that is, the center should be higher than the sides as well as the ends. This is called "crowning" and it is desirable because such packs rarely go slack during rough handling during shipment. The crown is developed in the second and succeeding layers by crowding the center apples in each diagonal row so that they lift up slightly from the apples underneath. This also helps the bulge. The crown is a little more difficult to develop than the bulge, but practice will bring perfection. The crowning is slight, amounting to only about a half inch.

The top layer of apples should be quite even. If any individual apple sticks out above the others it will be likely to bruise or be cut by the edges of the lid when the box is lidded. If several apples stand out, the lower one may be loose enough to rattle after the lid is on. Uniformity of size is the best guarantee to evenness of pack, particularly for a beginner.

(Here Mr. Mason began packing a box, talking as he packed. President Harrison timed him at 6 minutes for the box in spite of interruptions).

The boxes should be made of clear, white wood. This is a good example of a good box. It has solid ends and clear lumber in the sides and in the tops and bottoms. You can sometimes get boxes made with two pieces at the end. They are satisfactory, and possibly a little less expensive.

Any good box will do.

The boxes are lined with paper that just covers the apples with the ends overlapping slightly. The papers are put in and pushed slightly through the openings so when the bulge is put on the box it won't tear the paper from the corners. I might say that when I am doing this and talking at the same time, it is very much slower than the operation is when done in the packing house. Mr. Smith has men out in the Northwest who will turn out over 200 boxes a day, day after day. He has one, I believe, who has done as many as 275 in a 12 hour day.

MR. SMITH: I had a lady packing who did 270 boxes in a 12 hour day.

MR. MASON: When the apples are being wrapped, if you don't have a convenient hod in which to hold the paper, your operation is slowed down considerably. The hod I am using is a home-made hod. You can see how it is made—a little 12 x 12 tray with this cleat put on here which holds it upright against the side of the box, with nails put in here and bent over so you can hook it on the side of the box and a needle with a spring tip on it. These can be bought from supply houses. The needle runs into the paper, so that only one sheet comes off at a time. With a smooth, dry finger the paper won't pick up readily. You can get these rubber thumb stoles to go over the thumb, and then you can easily pick up one sheet of paper at a time. These come in several different forms. One objection to this type of hod is, until you have a few apples in the box it has a tendency to over-balance the box.

If you have any questions, especially about the cost, I imagine Mr. Pailthorpe and Mr. Smith could give you some information on that subject. Mr. Pailthorpe, could you tell us a little about the cost of the boxes?

MR. PAILTHORPE: I haven't been in the Northwest for three years. Mr. Smith has just come from there, and perhaps has all the latest information. It used to be from 5 to 7 cents for wrapping. I don't know what it is now. What is your estimate, Mr. Smith?

MR. SMITH: Ordinarily packing is a nickel a box. Some large shippers pack them for four cents. Of course, that isn't all that is connected with the cost of packing. The lidding costs about a cent, so it is around 9 or 10 cents.

MR. MASON: Well, the box is full. You can see it rises from the end up toward the middle here. I can't say there is quite as much crown as we could have. This is about the right amount of bulge for a box, and when the lid is bent over, it touches practically every apple in that layer. The bottom takes up half the bulge, so don't worry if you find your pack coming out that high. That is just as high as the pack should come out.

One more thing—the stenciling and stamping of your box is important. If you are going to put up a nice box pack, it is entirely probable the fruit will be worthy of a good lithographic stencil on the end and if your farm has a name it should contain the name of the farm. A decorative red and green or colored stencil on the end of the box always has added attractiveness. Then the name of the apple is stamped on the box, the number of apples is put in one corner, and if you have a good packing house system the number of the packer is put in the other corner so you can always tell who packed a box in case you find a box turns out to be slack. Some growers have lithographed wraps with fancy figures in the middle, so when the lid is taken off the box you see a very attractive surface.

PRESIDENT HARRISON: Any questions, gentlemen?

MR. MCCAIN: What about corrugated cushions for the top and bottom?

MR. MASON: They are used occasionally, but they are expensive, and if the apples are loaded on cars or trucks properly, they are not essential. They are only used when the apples receive a little rough handling, or with certain tender varieties. Such apples are bruised a little bit when the lids are put on or where the edges come against the fruit. A corrugated pad would save that.

MR. MCCAIN: In the Northwest a few years ago, they cut out using them.

MR. MASON: They have cut them out in a great many places. If you are going to use one cushion, the top would be the logical one, because when the lid press comes down, naturally a good deal of pressure comes on the apples on the top, and it is felt a little bit more than by the apples in the bottom layer.

MR. MCCAIN: Your method of putting in a paper lining prevents tearing?

MR. MASON: If you push the paper through the bottom cracks a little bit it will prevent tearing. Some people fold a crease in it, but that takes a little time. If you shove the paper down through the cracks in the bottom of the box

about a quarter of an inch, it prevents the paper from tearing, unless your box has an extreme bulge.

MR. WILLIAMS: You made it clear how to pack in the layers, and you said the bulge comes out right by getting the layers running right, but you didn't show us why it came out just right.

MR. MASON: One reason the bulge comes out right is—you can see that in the end of the box there is quite a little more space between the apples and the box than there is in the middle of the layer where four apples touch. Naturally, when an apple is put over that opening it is going to slide down farther there than when it is put in any other place in the middle of the layer because in the middle there isn't as much space to slip into. Therefore, these end apples keep sliding down a little bit lower compared with the middle ones. That is one reason for the bulge.

MR. WILLIAMS: I mean the number of layers. One more might be too many, and the last one might not be enough.

MR. MASON: If your apples are sized, I don't know how they could come out as far wrong as a whole layer with either a 2-2 or 3-2 pack. Mr. Smith, you have trained a lot of packers. How does the new man starting in overcome that difficulty in getting the right number of layers?

MR. SMITH: In some of the packs it is quite difficult, particularly on the apples which are just larger than the 3-2 pack.

There should be the same number of layers as there are rows in each layer, regardless of what the pack is, 2-2, or 3-2, or 3-3 pack. Thus, a 2-2 pack, having four rows, has four layers, and a 3-2 pack, having five rows, has five layers. The inspector in inspecting a box always opens it on the side, which gives him an idea of what the box was started with and what it ended with. So he gets an average run through the box of whatever was put into it.

MR. TOWSON: What is the idea of having that raise in the pack?

MR. MASON: The bulge is to hold the apples tight. If we had it flat and the box was put in storage for a month or two, or had traveled across the continent in a box car,

the apples would be so loose they'd just rattle around in there. There will be a certain amount of shrinkage during storage, and unless you have a high bulge some of the apples will get loose. But the bulge takes up all the slack as the apples nestle down closer together during handling or shrinking.

MRS. HARRIS: How high does it run?

MR. MASON: It runs about three-quarters of an inch at top and bottom. In actual packing you vary a little bit.

MRS. HARRIS: I'd like to know how many packers one nailer can handle.

MR. SMITH: Ordinarily, a good nailer would lid around a thousand boxes in ten hours, and an extra good nailer 1,500 to 1,600, and stamp them.

MR. MASON: A packer will pack from 100 to 200.

MRS. HARRIS: What happens to the box of apples after it is packed?

MR. MASON: In a small packing house, with a small crew, it would be set over on the lidding machine. In a large packing house the boxes would be set on the conveyor and run to the lidding press. On the way down they have a man who stamps the number of the apples and the name and whatever else has to be stamped on the box. Then the lidder puts the lid on and sets it down on its side, or sets it on a carrier, and when the stack is high enough they take it away with one of these two-wheeled trucks, or the carrier will take it off to the storage house.

PRESIDENT HARRISON: One of our loyal members would like to say something for the good of horticulture in Maryland. I'd like to hear from Mr. Andy Cohill.

DISCUSSION RELATIVE TO A NEW HORTICULTURAL BUILDING AT THE UNIVERSITY OF MARYLAND

MR. COHILL: The subject that I wish to present is in reference to the horticultural appropriation for College Park at the University of Maryland. We passed resolutions here last year urging the legislature and Governor Ritchie to appropriate funds for a Horticultural Building at College

Park, stating our reasons why we felt the need of such a building. We thought we were going to be successful until the Governor decided that he was going to cut expenses rather than increase them.

It seems advisable to give this matter thought and disdiscussion at this time and see if the matter cannot be presented to the Governor before the next meeting of the legislature. We have certainly been talking about this a good many years, and have been waiting a good many years for our turn. I think about every department over there has had splendid appropriations of various sorts and sizes and amounts, but the Horticultural Department seems to have to still continue in the same antiquated quarters and with the same antiquated facilities that they have had over there for years.

If we start this movement early enough, it is possible that we might be able to get some favorable action on it by the time the legislature meets again. It all depends upon getting real action from the legislature and the sympathy of the Governor as well as the recommendation from the President of the University.

I think probably it would be well for Senator Harrison to tell us what we might be able to do about this matter.

SENATOR HARRISON: I might tell you I don't know. I don't know anybody else that does know, because it was quite thoroughly determined by our people during the last session of the legislature that they were going to stop somewhere, and they stopped, and I think we have got to show them that we absolutely must have it before we will ever get it.

MR. O'CONNOR: Mr. President, it seems to me it is no use in having just one man fight for it. I am quite well aware of the fact that our good State Senator has done everything he can to get this building for us. The way it stands now, it is up to every man here to go before his member in the State Legislature and say, "Here, we want you men to appropriate for this building."

I went up to College Park to see one of the men there, and there were two or three typewriters going in the room

he was trying to work in. I asked him what in the dickens was going on. He couldn't tell himself where he was standing, there was so much confusion. It is a shame for that to be the case in a state like the State of Maryland. We have got to say to our representatives, "If you do not help to put this building through, off comes your head." That is the thing to do.

Get behind it. Put your shoulder to the wheel, and I am sure we are going to get it. I have fought for three years at home to get a high school, and that is what we had to do there, and we got one that is a credit to us in Prince George County. Let's go for this Horticultural Building and we will get it.

PRESIDENT HARRISON: I'd like to hear from Mr. Albert Allen.

MR. ALBERT ALLEN: Gentlemen, I think this question was discussed pretty well at our meeting last year. I don't believe that there is any man interested in fruit growing in the state but who is not in favor of it. It seems the one thing we have got to do is to convince our legislators that we need it, and to do that, if I understand the proposition correctly, we want to get across several ideas, which to me, show why the state should have it aside from the mere fact of helping a certain branch of the state. The fruit interests are only part of the horticulture of the state. The vegetable and canning interests are very much larger, and they are all for this building. The nurserymen, landscape men and florists are back of it.

If I interpreted the Governor's message last year correctly, he was against increasing the size of the University of Maryland very much because he didn't want to increase the cost of maintaining it. Our Horticultural Building wouldn't be for the horticultural interests alone. In other words, that would release the present quarters of the Horticulture Department for the use of some other very crowded department of the University, and the entire cost, it seems to me, should not be charged against the horticulture interests.

I think the research carried on there is one of the things that affects us further than the teaching of students, and while it might be possible to go ahead and teach students in the old quarters, I am sure proper research cannot be carried on without adequate quarters and adequate appropriations to support the work.

It seems to me that all these things should be placed in their proper light, and not just say that we want a Horticultural Building.

PRESIDENT HARRISON: I'd like to hear from Mr. A. L. Towson.

MR. TOWSON: I think we passed a resolution last year in regard to this thing. Of course, resolutions don't bring about very much except to express our sentiments. You have to get behind them and support them. I don't know how we can reach this thing except by advertising it. In other words, we will have to push it, and talk about it and get it before the press. I don't know exactly how we ought to go about it. If we had a big fund to subsidize lots of papers, I'm sure they'd help. We will have to do what we can, and if we want to accomplish something, it is time we started right now.

MR. ALLEN: In other words, if there is to be a certain amount of money available, according to the economic policy of the state, for new construction at College Park, it seems to me it is about Horticulture's turn to have that, even though other things are deserving. Horticulture hasn't had much recognition so far, and if there is to be just one thing done a year, it seems to me that horticulture, which includes tree fruits, small fruits, flowers, vegetables, the canning industry, landscape, nursery management, and all the other lines, not just growing peaches and apples, should be recognized now.

We all know that if we owe two men quite a good deal of money, and one man is always asking us about it, if we can't pay both of them, he is the man we are going to pay. It is fair that we should have our turn right now, and the way we are most likely to get our proper turn is to say something about it.

It seems to be an annual matter to appoint a Resolutions Committee for this Society. Tomorrow we are going to offer a resolution bringing up this same question and present it to the Society, perhaps a little bit stronger or a little bit more up-to-date than the resolution we presented last year. At this time, when we have a very good attendance, I think it would be well to call for a rising vote to find out the sentiment on this thing. It may be when the resolutions are presented tomorrow, we won't have very many fruit growers here, and if we can get a practically unanimous vote today of these 125 growers from all parts of the state, it will give us a little bit more strength to go ahead to our various legislators and to Dr. Pearson or the Governor or anybody else where we might make a little headway in getting this appropriation.

PRESIDENT HARRISON: I would like to hear from Dr. Thomas B. Symons, of the University of Maryland.

DR. SYMONS: Mr. Chairman, I can only reiterate what has been said. I think we should increase our efforts toward bringing pressure to bear upon those authorities, stressing the importance of a Horticultural Building.

With all due deference to our enthusiasm last year, and to the desire of Governor Ritchie to serve the institution, and the desire of the President to spread the money around to the greatest needs, there are some very outstanding needs at the University, and it is going to be the group that will stress its point most, perhaps, that will get early consideration.

While I was sitting here, it occurred to me that there are four projects the President mentioned the other day that have already been suggested. One of these is land. I don't know of anything that is more pressing than that. We have less than 90 acres at the present time for all experiment work. Then there is a dormitory for girls, there is a central heating plant, and there is the horticultural building. I only mention these to show that the President, the Governor, and the Legislature will have a difficult time in allocating the amount of money that will be available in meeting the outstanding needs of the institution.

I have been one of those who for years has been hoping to see a Horticultural Building put up. I believe, as Mr. Allen says, that all here should determine today that they are going to continue to bring their individual force and their friends' force to bear on the need of a Horticultural Building. That is the one thing to do. It will be a short time now, within two or three months, when we will be thinking of the budget for submitting to the Governor. Sometime this spring or summer the budget will be submitted to the Governor for consideration. He is going to react according to the demand of the State, and Senator Harrison and the rest of the Legislators are going to react to the greatest demand in the state. I believe it is up to us fruit growers, horticulturists of all kinds, to show the striking need, but I mention these other cases to show that a very good case can be made for all of them.

I only mention these four items. There are many others that could be mentioned to show you the need for an energetic campaign on the part of the horticulturists to impress upon the institution, impress upon the Governor and the Legislature that we want a horticultural building. I think we should put on our letterheads, and I think the Horticultural Society should adopt for a slogan, "We want a Horticultural Building." If you make that slogan loud enough, and let it be heard often enough, I think you will get it. As Senator Harrison says, there is only going to be a certain amount of money. I have always felt that the state can only afford a reasonable appropriation, and that the needs that are set forth will have to be taken care of as the time and money will permit. So I hope we can adopt the slogan, "We want a Horticultural Building," and in the 1929 Legislature maybe we will get it.

SENATOR HARRISON: I think Mr. Allen's suggestion is very good, and also Dr. Symons'. We all understand, probably, what we want.

We, assembled here, request that the Horticultural Industry of the State of Maryland, be recognized by erecting a substantial Horticultural Building at College Park. Then from this day on get your people at home interested. It

does not mean that you can come here and just pass a resolution. Very good, but get your home people interested and if they are interested, let them come to Annapolis also and ask for it. We will know then that they are willing to be taxed more to get it and really want it.

One of the serious things in the Agricultural College today to my mind, is the lack of proper funds for maintenance of those new buildings that have already been erected. It is a crime; it is a shame. The State of Maryland has erected one new building after another, and hasn't provided enough funds to keep them in perfect condition. The Governor knows it. The President of the institution knows it. The boys that go there know it.

I tell you, I think the serious thing in Maryland today is to make its funds used in a way to keep those buildings up to the minute and I am also for a Horticultural Building.

You have first got to convince your people at home so that they are willing to pay the bill. It is no easy proposition, I tell you, and I do say we ought to take a rising vote on it. The agricultural interests of Maryland are entitled to a Horticultural Building, we believe.

PRESIDENT HARRISON: It looks like if we are going to get a Horticultural Building we all have got to go back home and sell the idea to our friends before the next political campagin.

All those willing to work for the Horticultural Building, and in favor of proposing such a building to the Governor of Maryland, please stand.

(All the members arose).

PRESIDENT HARRISON: Very fine, 100 per cent.

PRESIDENT HARRISON: The next speaker on the program is Mr. H. A. Spillman, U. S. Department of Agriculture, who will speak on "The Value of the Newer and Smaller Packages for Marketing Fruit." Mr. Spillman.

THE VALUE OF THE NEWER AND SMALLER PACKAGES FOR MARKETING FRUIT

H. A. SPILLMAN, U. S. Department of Agriculture.

Mr. President, Ladies and Gentlemen:

I have a sort of feeling that this thing ought to have been turned around, and I ought to have an opportunity to listen to a talk about the value of newer and smaller packages rather than to try to talk about them myself.

There is a great deal we have to learn about some of the newer and smaller packages which have not gotten into very general use. The most important new package that is used for fruit, as you all know, is the straight-sided bushel basket, which was introduced four or five years ago in Michigan. This basket was devised by a man by the name of Poke, who was President of the Coöperative Association which was shipping apples and peaches. He wanted a basket that could be packed through the bottom as compactly as a barrel. The first basket was made by taking an ordinary round basket and a safety-razor blade and cutting the bottom out of it. That was started as an experiment.

He finally succeeded in interesting some basket manufacturers in the proposition, who developed the basket, which was known by the trade name of E-Z-Pack. This basket had a bottom made like the cover, which was fitted in and stapled. That basket bade fair to become very popular when it was introduced.

As a result of that we have on the market today about six or seven different varieties of straight-sided baskets. To name a few of them, we have the E-Z-Pack, the Quick-Pack, the Ideal, the Sturdy-Pack, and the Marvel-Pack. The Quick-Pack is the basket put out by the E-Z-Pack Manufacturers with the bottom stapled in. The Ideal is practically the same thing. The Sturdy-Pack basket is similar in construction, except that the staves used are the same width as those in the ordinary round, straight basket, and the staves overlap just as they do in the ordinary basket.

The Marvel-Pack is simply a hamper. It is a little higher than the other straight-sided baskets, but the general ef-

fect is about the same. I have been a little surprised that this shape of hamper has not been more popular throughout the hamper using section. The old willow hamper with the bottom 15 inches, and the 18 inch top and 20 inches high, is, as you know, top heavy. The bottom is too small and it is very easily tipped over. The light bottom and round hamper gets away from that difficulty. When this package was introduced, I rather expected to see it come into considerable popularity among the hamper sections. That has not been the case, and as a result, the past season it has been made by only one factory. I think there is another Delaware factory which either has it in production, or is going to enter it in production, and maybe one or two more will start to make it.

There are always new ideas coming up in Packages. Many are called, but few are chosen. The straight-sided basket has gained wider popularity in a shorter time than any other package that I know of. This is because it has so many obvious points of superiority. It packs better in the car, because it is flat. It stores better in the cold storage house because it is not only flat-sided, but flat on the bottom, and because it is stronger and stacks higher. The old type of round stave basket had a tendency to mushroom if packed higher than four layers in a storage house, and for that reason was penalized by cold storage men.

I am not trying to engage in propaganda for the straight-sided basket. I am quite an admirer of the old, round stave basket as improved in later years by the introduction of the wider bottom type, and I believe it has its place for a good many commodities, particularly the lighter commodities, and the manufacturer is convinced that it is a coming package.

In our production report for 1926 we listed only 14 factories making straight-sided baskets. It was about double that in 1925. I'll take that back. In 1925 it was 14 and we doubled it in 1926. In 1926 we listed 28. It will be something like 35 in the 1927 report. When you stop to think that five or six years ago there were only about 45 factories making fruit baskets at all, and that now there

are something over 90, and that over a third of those are making straight-sided baskets, you will realize that that package has come into a great popularity, because the manufacturers are not making the heavy investments necessary to make these baskets unless they feel that they have a good market for them.

One of the interesting things about the straight-sided basket is that it has been accepted by the steamship companies as an export package when properly packed at a little better rate than was given last season. The rate on the baskets is 45 cents, on the barrels 90 cents, and the rate on the boxes is 30 cents. That concession was obtained by the United Apple Shippers Association. Whether it will be retained will depend on the quality of the baskets made, the quality of the straight-sided baskets which are used, whether or not they are strong enough for the trip.

The quality of the straight-sided baskets which are used depends not on the manufacturers, but on the purchaser. The manufacturer in the last analysis has nothing to do with the quality of the basket. He has to make a basket which he can sell, and when the apple shipper buys baskets instead of buying quality baskets, the quality of the basket is inevitably reduced. That has happened during the 1927 season. It has happened to such an extent that the steamship companies have threatened to take away that special rate unless the quality is kept up.

The manufacturers are trying to get together and adopt a standard quality. Whether or not they can get all the manufacturers to appear depends altogether on whether you fellows who are buying baskets buy wholly on the basis of price, or whether you require your manufacturer to follow certain specifications.

I have no quarrel with buying on price. Packages make up such a big element in your cost that you are thoroughly justified in getting as cheap a package as you can, buying at as low a price as you can, but you are not justified in putting up a cheap package. When you do that you encourage the manufacturer to cut his staves shorter than he should, and you encourage him to let his stave ends

stick out instead of seeing that they are in, and you encourage him to slap his cover together any old way, instead of seeing that his cover machines are working in such a way that the staples will be in the center. You also encourage him to use a little narrower stave, because competition in the basket industry is very keen. There are at least three times too many basket manufacturers in the United States, many started largely as a matter of local pride. Local people in many instances thought they were being robbed, and they wanted more factories to get the stuff down cheaper. If the fruit shipper continues to buy wholly on price and not on quality, he is going to get poor baskets.

There isn't anything very complicated about buying on specifications. It does require, however, a minimum knowledeg of what ought to go into the baskets. It is simply a matter of acquiring what every man ought to know in asking for a price on baskets and submitting the specifications, such as, "How thick are your staves? How thick are your hoops? How wide are your hoops? How many staples do you use, and what guarantee can you give that those staples will be well placed?" Then you get the different manufacturers' specifications and compare them and their prices, and you can tell which is the cheapest basket for you to buy. It may be that the manufacturer who is offering you the lowest price has the basket you are justified in buying. If you examine prices and specifications, you can readily see the one man's basket is so much better than another man's, that you'd better buy that. In that case I think the cheap price would be foolish.

Going on the question of smaller packages, what smaller packages will be adopted? The use of roadside stands for marketing has brought about the introduction of some smaller packages. The principal ones among them are the four quart and eight quart sizes of round stave basket. These, when made for roadside purposes, generally have a handle and a cover, and are very attractive for that purpose. Whether or not you can afford to use them depends, as in the use of any small package, whether you can get a price for your stuff sufficiently high to justify that small pack-

age. In other words, four-quart round-stave baskets and eight-quart baskets are not shipping baskets or packages, but simply roadside packages. If you can sell your stuff from a roadside market for a sufficiently high price to justify using that smaller container it is all right to use it. Naturally, the price of those four-quart containers is higher than a bushel container, because the labor in making four containers is higher than the labor for making the larger sizes, so you can see that there is bound to be a higher price.

Those are about the only new packages that have been introduced wholly for roadside purposes.

The principal efforts which we see in the line of new packages for fruit are in the carton propositions. You can buy corrugated cartons today which will hold a half bushel or a bushel of apples simply packed in bulk, or packed according to a definite scheme like the boxes are. You can buy corrugated cartons which have a cell for each apple in half bushel sizes, or you can buy them to hold a dozen or two dozen, just as you wish. You can buy small, light cartons, which in turn are packed in bigger corrugated cartons, just like they pack eggs in dozen cartons and then pack them in eggcases or bigger cartons.

Those have been tried out in some places. That is one of the hardest things to get definite information on. You can write to a container manufacturer. He says yes, he makes a carton, but he doesn't know just what they are used for, and he will give you the names of some people that use them. You write to them, and they haven't any definite ideas on the subject.

However, I got some light on that from the Minnesota Potato Growers League who are marketing potatoes in packages. They use 15 pound, 30 pound, and 60 pound packages. The disadvantage of the 60 pound package is that it doesn't hold up under 60 pounds of weight. The 30 pound package appeals to the consumer, and he is the man they are after, and also the 15 pound package. They are concentrating on the 15 pound package.

We had some correspondence with a dealer in New York who has repacked apples in cartons and sold them. He

said that it was a good idea as long as a good many people didn't get into it, that if a good many people got into it, they wouldn't get any money out of it. Mr. Pailthorpe was in a man's place one time, and the fellow showed him some of the apples, and they weren't up to standard, weren't good apples. The man apologized for them.

That brings me right up again to one of the fundamental things to consider in trying to get up a carton package, namely, you have got to have fancy stuff in order to put it into cartons. If you don't have it and the consumer buys a package of that, apples, pears, or citrus fruits or anything, he is going to bring it back and not buy any more. If it is good he is coming back for more; if it isn't, he isn't coming back for more. That was tried out on a small scale down in Florida two or three years ago, and it didn't work, simply because the growers didn't put fancy stuff in it. It only worked in a few places.

I happen to know one man who thought it was a fine scheme. He got one of the first cartons of grapefruit that came into Chicago, bought it sight unseen, opened it up, and they were all as green as could be. He was cured right then and there on the use of cartons for grapefruit.

The cost of these cartons is likely to be high. You get right up against that cost proposition again. Can you afford to use a high-priced package? Can you get a high enough price for it? I am inclined to believe that the development of carton packages is something that can only be experimented with at first, and that only by people who know that they have got fancy or extra fancy stuff, and who have got money enough to take a chance.

One interesting thing on the small packages which doesn't concern fruit but another thing, is that in Chicago there are two or three concerns who make it a business to repack Idaho potatoes. They use two packages. One is the apple box. They pick out these potatoes and pack 80 or 100 to the box. They wrap them just as you do the apples, and it makes a very attractive box. The other carton is a 15 pound package. They are beautiful potatoes, and the price is high enough to pay them for their trouble. That,

however, isn't a case of growers trying to market that way. It is a case of dealers who are right close to the market.

Whether smaller packages will come into vogue to a great extent depends, I think, on the chain stores. The chain stores like small packages, but I am inclined to believe that as far as apples are concerned, the bushel basket and bushel box meet their needs for small packages.

You can all remember when cranberries came only in barrels. Then we had the half barrel, and within the last couple of years, the quarter barrel box. This smaller size is used for cranberries early in the season when people don't buy cranberries much. Around Thanksgiving the stuff come out in half barrel boxes. I doubt if you can find a quarter barrel box in Baltimore today, but early in the season they are a common sight.

If the chain stores demand small packages and pay for them, you can afford to use them. As I said a while ago, the bushel box and bushel basket are the smallest sizes these stores seem to want. I am not sold on the use of smaller packages. I think it is highly experimental, and anybody that goes into it must be prepared to lose his money or put it across.

One of the other packages that might be spoken of as something new, and yet it isn't, because they have been trying to put it across for years, is a paper berry box. The original paper berry box had a coating of paraffin on the outside which was very easily rubbed off, and where it was scratched off it had a tendency to collapse. The latest developments in paraffin seemed to give them a little better coating. They seem to be able to get the paraffin deeper into the paper.

Then we come up against the question of whether you want a package of that type. I haven't anything to say for or against it. I am only repeating what people have told me. They say you can't use a paper berry box unless it is absolutely impervious to the juices of the berries so it will stand up. On the other hand, the wooden berry box people will tell you that if you have a box which is absolutely impervious to the berry juices and wont take them up,

you are going to have a mess in your boxes. The beauty of wooden boxes is that they will absorb the juices without making a mess in the box or of the box. Whatever may be the reason, paper berry boxes have not gone through very largely in the last year. A company in New Jersey made several million in 1927, and a company out in California made something like 10- or 12,000,000. But when you consider that it take 400- or 500,000,000 berry boxes every year to supply the United States, you will see they haven't done anything yet. One reason they have some difficulty in getting people, I think, is because the manufacturers are not prepared to put paper boxes together, whereas, the wooden box man is. The paper people are determined that they are going to put paper packages of some sort across—corrugated cartons for larger packages and paraffin boxes for smaller packages, and results of some kind may come, but it will be quite a while before they come through.

I don't think there is anything more right now that is of any striking interest. The straight-sided basket is the newest outstanding package. Paper berry boxes are still in the experimental stage, and also corrugated cartons. (Applause).

MR. WILCOX: I'd like to know if anything has been done about making paper pails around 4 to 8 quarts to use for peaches?

MR. SPILLMAN: Nothing that I know of.

MR. WILCOX: If you could get something for about a cent and a half it would be quite a difference.

MR. O'CONNOR: If a man wanted smaller packages to ship in carload lots, it wouldn't be advisable for a small grower, unless he is prepared to furnish a carload, to go into those small packages.

MR. COHILL: In exporting the bushel baskets, is it true that the steamship companies will not pay the insurance on those baskets?

MR. SPILLMAN: I think that is true, yes.

MR. COHILL: They gave a special rate, but they won't take care of the insurance?

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MR. SPILLMAN: They are not sold on the idea; unless the baskets are kept up to a very high quality, it is going to be hard to keep that rate.

PRESIDENT HARRISON: Are there any other questions? We are going to have a very interesting program tonight, so I hope you will all be present, and bring your friends. The meeting is adjourned until this evening.

(The meeting adjourned at four thirty-five o'clock).

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TUESDAY EVENING

January 3, 1928

The Third Session convened at seven-fifty o'clock, President Harrison presiding.

PRESIDENT HARRISON: Gentlemen, we will call the meeting to order.

Dr. H. J. Patterson has been connected with the Maryland Experiment Station for many years. We will all be pleased to hear from him tonight on the subject, "The Relation of the Experiment Station to Agricultural Development in Maryland." Dr. Patterson.

THE RELATION OF THE EXPERIMENT STATION TO AGRICULTURAL DEVELOPMENT IN MARYLAND

DR. H. J. PATTERSON, College Park, Maryland.

Mr. President, Ladies and Gentlemen:

I had hoped that I would have a systematically prepared paper for you tonight, but unfortunately, too many other things crowded in, or I left the preparation of it off until too late, so that I will only speak to you from a few rough notes I have made.

I first want to congratulate the Society on this, its Thirtieth Anniversary. The 26th and 27th of this month will complete thirty years since the organization of this Society in this

city, and I believe we all owe a few men of the state our thanks for coming together and organizing. Professor Willis G. Johnson, who really did a great deal of work in organizing this Society, should have a vote of gratitude from the Society.

I believe there is only one of the charter members of the Society living today, and he is here in attendance. I refer to Mr. A. L. Towson. But there is quite a long list of men whom we should think of on an occasion like the Thirtieth Anniversary of the Society. Mr. Biggs, of Washington County, who is a member of the Legislature today, did a great deal to bring the Society into existence, and to get an appropriation for the support of its work. This Society, like many organizations, came into existence because of a real need. Fruit growing had been engaged in commercially in Maryland for 20 to 40 years in different parts of the state previous to the organizing of the State Horticultural Society, but had not made substantial progress. Peach growing on the Eastern Shore was declining year by year because of the lack of knowledge on the control of insect troubles, cultural troubles, trimming troubles, and fertilization troubles, and the same may be stated with regard to the growing of all fruits in different parts of the state.

About two years previous to the time of the organization of this Society, the San Jose scale made its appearance in Maryland, and the fruit people were very badly scared. They thought the fruit industry of the state was doomed, that they were not going to be able to cope with this little insect. But that insect, to my mind, has proved a great blessing to the fruit interests of our state. It called into existence the plant pathologist, the office of the plant pathologist, and the office of the State Entomologist, and those people have been helping in a very material and splendid way to put fruit growing on a substantial basis in this state, and I believe you can say that commercial orcharding has been going forward ever since the organization of the Society.

The Society was organized around the control of insect and plant diseases, and we must pay tribute, and must rec-

ognize the fact that the entomologists and the plant pathologists have done us a big service, and are continuing to help you solve some of your most difficult problems.

That has been one of the big contributions which the experiment station has made to the industry. The solving of these problems has required research from the very start. I am not going to take your time to cite the details of even the experiments on the control of San Jose scale, but they were elaborate, they were costly, and it was a long while before we reached a place where the control was simple and could be handled by every man of intelligence who was growing fruit.

In connection with the organization of the Society, I want to mention in addition to Mr. Biggs, Mr. James Harris, of Kent County, Mr. Vincent, of Baltimore County, Mr. Kerr, of Caroline County, Mr. Harrison, of Worcester County, Mr. Cohill, who is still with us, of Washington County, Mr. Emory, of Kent County, Mr. Lambs ,of Calvert County, Mr. Hartshorn, of Montgomery, Mr. Matthews, of Somerset County, Mr. Bruce, of Washington County, Mr. Balderson, of Washington County, Mr. Rogers, of Baltimore County, Mr. Allen, and the Hanson brothers. All of these men were big factors in putting the Society on a substantial basis in the early days, and while some of those men are still with us, yet, you younger men who have come into the Society in recent years, owe a great deal to these men because of the pioneer work they did, and the many difficulties that they overcame to keep the Society going and in putting commercial orcharding on a satisfactory basis in Maryland.

The next big step, to my mind, in connection with giving the people of Maryland an appreciation of their ability and what they could do along commercial orcharding lines, was when your Secretary, Professor C. P. Close, now with the Department of Agriculture, took some of the fruit grown in the State out to the National Apple Show at Council Bluffs, and took a lot of prizes, and proved to the people that Maryland fruit was as good as was produced anywhere else in the United States. That caused a great awakening

and a great appreciation of our own capability, and that marked an epoch to my mind, in the development of fruit growing in Maryland.

Maryland has about 6,362,000 acres of land. A little over 5,000,000 acres of this is found in our farms, and about 3,350,000 acres of it is under cultivation in our farms. You can see that this leaves about 3,000,000 acres of land that is not fully utilized, and while much of that land cannot be profitably utilized at this time, yet, I believe that a great deal of it will be found useful and can be utilized in connection with horticultural crops.

At the present time we are producing in vegetables and fruits a little over $31,000,000 worth annually. We have within 400 miles of this city 15,000,000 consumers living in urban places, not including the people out in the country whom we presume produce their own fruits and their own vegetables.

When you consider that fact, you realize that Maryland has a unique place from a horticultural standpoint, and I believe that one of our big problems for future research will be to develop the market, and for us to know in a proper way—you may call it orderly marketing—what places we ought to reach, and how much they will consume, and we ought to have a central place or agency that will assist us in not overcrowding a given market. I mean by this such cases as are cited in the Federal Market Report should not occur. They have determined, for instance, that Pittsburgh will consume easily 15 carloads of peaches per day. Yet, they report that during one week in September there arrived in Pittsburgh on Monday, 31 cars; on Tuesday, 24 cars; on Wednesday, 16 cars; on Thursday, 1 car. The producer evidently was getting a little word back home that that market was crowded. But on Friday, there were 15 cars again, and on Saturday, 74 cars. That condition resulted in having 118 cars on the track with a deflated market the following Tuesday, and a broken one, nothing selling. This is disastrous for the growers and for every person concerned. Yet, the survey showed that in the same period some marekts didn't have any fruit at all.

That kind of a condition should not occur, and I believe that research in the experimental stages ought to assist you greatly in handling and overcoming such situations.

Now, every fruit grower to some extent is a general farmer, and is interested in the state of crops and in that connection I want to call attention to a few statistics of the accomplishments of the states in regard to increasing yields with our staple crops. The average yield for corn during the ten years from 1886 to 1895, was 23 bushels and a half. For the ten years of 1913 to 1922 it was 37 bushels and seven-tenths. In 1926 the average was 39.8.

It was during that latter period that the Experiment Station started its work on the improvement of corn. At the first corn show we ever had in Maryland, there was not a single named variety of corn exhibited. It was all called either yellow corn or white corn. The nearest to a named variety of corn that was on exhibition anywhere in the state—we had three big corn shows, one on the Eastern Shore, one in Harford County, and one in Western Maryland—was a sample of corn exhibited in Harford County called Whitecap Corn. But out of those corn shows grew the Corn Improvement Association, which resulted in the Crop Improvement Association, and we started on the systematic breeding and improvement of corn by everything that would tend to improve corn, and you can see by those figures that in that period we advanced 15 to 16 bushels of corn per acre.

I don't claim that the Experiment Station is responsible for all of that, but the Experiment Station took the initial lead in that piece of work, and has followed it systematically ever since, and if we can claim but one-third, five bushels, and multiply that by 700,000 acres, almost annually planted with corn in the state, you can see that the amount that that contributed to the farmer's income and the wealth of the state is very great, and that if we had but a small percentage as a dividend on that improvement alone, you would have no difficulty in getting a building such as you were discussing this afternoon in the interests of horticulture.

In fact, one year's dividend on that corn alone would pay all the expense of all of the research and educational work done by agriculture, and that improvement for one year would a good deal more than pay for all that has been expended on fifty years of the existence of this institution.

I could mention the same thing with wheat. The average yield of wheat in the first period was 13.3 bushels, and from 1913 to 1922, 16.1, and of course, we had a phenomenally good year in 1926 and we got 23 bushels as an average in the state. We can trace, in making a survey of the variety grown in the state and the sort of seed, about 70 per cent. of the seed as having come from seed that was grown or improved by the Experiment Station.

Potatoes: This is more nearly a horticultural crop. In our early days we studied varieties to a considerable extent. We had over 40 different varieties. But potatoes have advanced in those same periods from an average of 68 bushels to 90 bushels per acre. Of course, a good potato grower got better than that, but their advance has been correspondingly great.

It may be interesting to you to call to your attention that Maryland stands third in the growing of vegetables, ranks third in the United States when we put it on a square mile basis. We stand eighth in the growing of fruits on a square mile basis. We stand fifth in cereals, and seventh in all crops. So while Maryland is not a big state, when we compare our total yields of any crop with the total yields of states that have a very much greater area, it makes our yields look rather small and places us a good ways down the list; when we consider these things on the square mile basis you can see that we rank relatively well.

I have cited these staple crops because figures were available for those crops. If we actually had the figures with reference to our horticultural crops, I believe the advancement would be just as marked, but unfortunately, the statistics with reference to horticultural crops were not compiled in the early years, and are not available.

I am not going to take your time to cite in detail very many things, even along horticultural lines, that the Ex-

periment Station has accomplished in the forty years of its existence. We have in progress at the present time about 160 different projects at the Experiment Station. About 50 of these are directly on horticultural subjects, but in the final analysis, I believe it would be very difficult to pick out any of them that would not be of interest and be helpful to the horticulturists' interest.

Maryland inaugurated the soil work that was afterwards taken over by the U. S. Department of Agriculture, and Professor Whitney, who died a few weeks ago, was connected with our station, and inaugurated many of the projects along soil lines that he was engaged in, which caused the formation of the Bureau of Soils in the United States Department of Agriculture.

Maryland has had a complete soil survey made of every county in the state. That enables us to make an inventory of our soil resources, and by the help of the soil surveys you should be able to determine what soils are adapted to any particular crop you desire to grow, and with the help of the specialists in horticulture you should be able to determine just how to handle that soil for a particular crop. The Soil Department has done a great deal of work, and our Horticultural Department has coöperated with them, and has gone still further in the study of many problems as to the needs of the different soil types in the way of fertilization, and I am quite confident that the application of the results gotten by those two departments in the making up of your fertilizer will save you many, many dollars, and very much worry when you are sometimes disappointed with results and go it blindly, without availing yourself of the results which they have obtained.

I believe the future has in store a good many things in connection with the use of fertilizer that we do not know now or recognize now. I mean that a good deal of our work possibly has been following along the old, and possibly, the well-beaten path, and to some extent our research workers may have gotten into ruts. But in my touch with research men today, I believe there has been no period when they are giving greater attention to looking over the terri-

tory and side paths to see whether there may not be some other ally which will help to give more fruitful results than we have had in the past, and I believe as a result of that attitude of mind on the part of research workers that we are going to get some results that are going to possibly be outstanding. I believe along many of our plant lines that the diseases and some of the insect troubles may be brought back to improper feeding of plants. We all know that, if for any reason, a plant or animal is unhealthy, that that is the plant or animal that disease will take hold of quickly. That is the plant or animal that insects will attack and do the greatest damage to.

We have had some experiments in progress in our greenhouses during the past few months that show that tomatoes, for instance, will not grow properly or be healthy without having some boron present in the solution upon which they feed. Plants without that look like plants in the early stages of disease. I don't say that that is the cause, but it looks as though it was unhealthy, or starting in that way. We know, other experiments have shown, that legumes won't produce nodules without boron, and there have been numerous experiments with plants and some with animals that show that the lack of very small quantities of certain elements that we haven't recognized as essential makes all the difference in the world between success and failure.

I firmly believe that a great deal of research in that way is going to lead us into practices that we sometimes think of as being impossible. But if a small amount of boron will make that difference in a plant, and it does, through taking it into its system, I believe that under certain conditions we may be able to control certain diseases in plants by getting certain things into their systems that are lacking which cause that diseased condition. While I don't say it will cure disease, it will cause a resistance. We can put into the plant a certain amount of resistance, and we may as a result of that line of investigation, find that some of the things that are claimed by a man whom we termed a quack here and there and the other place, had some real

reason back of it that made it work under his particular conditions.

Our Department of Plant Physiology is doing a whole lot of fine, fundamental work in working out the nutrition problem in connection with plants, and working out storage problems in connection with fruits and vegetables, and the pieces of work that they are doing are recognized the world over as of great value, and are going to put a great many storage problems on a good, substantial basis.

The work that our Department of Plant Diseases, Plant Pathology, has been doing on breeding up plant resistance of certain crops is proving very worth while. This is noticeably the case with tomatoes. While other people have taken up the work that was started and suggested by the lines of work done at our Station, yet, our tomato growers are profiting thereby.

The orchardists and the vegetable growers meet more difficulties and problems in connection with the control of plant insects than anything else, any other one thing, and I am quite sure that you have all found that our Department of Entomology has been very active in helping you to meet and solve these problems, and while a good many of these problems come up periodically, or in cycles, there are always some with us, and our Department has been active and on the job in solving these problems.

One of our biggest projects, of great interest to the horticulturists, is in connection with our canning crops. You all know Maryland has been one of the pioneer states in canning, for a great many years almost the leader of all canned crops. We are in the lead, I think, yet with tomatoes. We have canned as high as 45 per cent. of all the packed tomatoes of the United States, and when you consider the size of the state, that means a great deal. But our canning industry has been slipping away from us gradually. Other sections have been coming into the field. They have adopted improved methods. Some of them have soil and climatic conditions a little more favorable for certain crops than we have. This is particularly true with reference to peas.

So it has necessitated our people waking up and doing something on this canning problem.

Two years ago we decided to make the canning industry one of the major problems for investigation by our Station. We are working on every phase of the problem from the producing of seed better adapted to the conditions in different parts of our state, working through until we can place upon the consumer's table the class of product that he desires. Our Department of Economics is making a big study on the cost of canning and the cost of producing canned crops, and the cost of distributing them from the cannery to the consumer.

All of these factors enter into it. The man who can deliver to the cannery a high quality of product which enables him to sell at a good price and give the consumer something that he is satisfied with, is certainly going to place our canning industry on a higher plane than it has been for a few years and enable us to maintain our position. That is one of the big problems that we are working on, and I believe that we are going to find in a very few years that we will make a considerable and worthwhile contribution to this industry and help to maintain it on the basis that we'd all like to see, and make it profitable both for the producer and the canner.

I believe our institution can help your industry to a considerable extent by going over with you in groups or in sections or districts, anyway that you think is best, to make surveys of your problem and determine what should be done to meet these problems. I believe we will not find our problem in any one particular factor in this industry. You can talk about orderly marketing, and that has been a slogan for a few years, but it seemed to attract a great deal of attention, and a great many people felt that that would solve the whole difficulty. But I am satisfied that we must give greater attention to knowing whether we have conditions that will enable us to produce a thing satisfactorily. I would include that in the general, broad statement of orderly production.

There are certain people who are so located that they

can produce a thing economically, and that is the first step in being able to sell at a profit.

Then there is the question we had up today—how to pack the fruit. I'd call that orderly packing or preparing for market. Then you are in a position to go ahead and market.

So there are the three steps that need to be taken, and I believe our Station can do a good deal towards helping you to solve these problems by sitting down with you and helping you to decide your difficulties, and then working out plans for their solution.

We hear a good deal about coöperation, but as I have observed coöperation among farmers, it is that each is satisfied for every fellow to coöperate except himself; and that too many of the plans for coöperation necessitate everybody to be made in the same mold. Farmers or no one else are all made in the same mold. They have different conditions. You can talk as much as you please, but people will not coöperate unless it is profitable for them to do so, and even then people will not always coöperate.

But I believe that we have a whole lot of big problems to solve in connection with marketing of horticultural crops as well as other commodities coöperatively, but we are not going to do that wholly alone. A great deal of that depends on transportation and distribution, and there can be a great deal done to solve those problems, but we have got to unite with the transportation and distribution agencies if we are ever going to solve the problem satisfactorily. We can go into a room and sit down and do all the kicking and growling we want to by ourselves, and we are not going to reach a conclusion on that question. But that is a thing that we must go outside of our own circle and get some coöperation on.

I believe that our business in common with other industries, the success of it, is going to depend in the future upon better business research. I believe you can go back over any period you desire to take into consideration, and you will find that the real help that has come to the farmer has come to him as a result of research. I have given you a good many figures and references this evening about

the value of research to you on corn and on wheat and the other things, and I believe that you will find in very few instances where any of our big problems or our ills have been cured through some magical kind of legislation. But research has put the farmer, and particularly the line you represent, the horticultural interests, upon a very much more substantial and better basis than it ever has been, and your future success is going to depend upon the application of what has been found out by research, and the still greater future is going to depend upon having a great deal more research.

I have no doubt that many of the things that are being wasted now in connection with horticultural pursuits will become a source of profit to you some time just as it has in some other industries, and certainly in fruit growing we must give a great deal of attention toward the utilization of by-products. We could point to a great many instances where research has helped to make by-products a source of great profit. Cotton seeds is one noted example that I suppose you have all had called to your attention. One of the best wall boards on the market today is utilizing the sugar cane stalks after the sugar has been pressed out. So we might accomplish a great deal in our business along that line. But you will need research.

The National Industrial Conference Board has made a survey of a thousand industrial concerns in New England, and finds that they are recognizing research as one of the big factors in cheapening production and helping to put their business on a substantial basis, and they find that one thousand concerns are spending on research $15,000,000,000 annually. Now, that is a big sum of money. That is about twice as much as is being spent on agricultural research by our state institutions. That represents in the different firms from 1 to 3 per cent. of their gross sales. If we had 1 per cent. on the gross horticultural sales in Maryland, we'd be spending $313,000 annually on research for horticulture alone, and while I am not advocating the taxing of your industry to that extent, I do believe that agriculture is the biggest undeveloped resource that Maryland

possesses, and that if the state is to become truly great it must do so through the development of its agriculture, which includes horticulture, and that when we consider these big figures the state can afford very well to put a whole lot more into research for the benefit of agriculture and for the benefit of horticulture than they are doing. It will pay bigger dividends than anything else they can put money into. The future of our agriculture in Maryland, with the 15,000,000 people within 400 miles of this city that have to be fed, is in the production of food for human consumption.

So take some of these facts back to your home people, and particularly to your Representatives that we talked about seeing about this Horticultural Building you want, with horticultural equipment for research and for education, and impress upon them that the state has great opportunities, and without this help on the part of the state, we are not going to get what we ought to have or bring our state up to the place that we should occupy in production.

Now, I have disconnectedly cited you quite a number of things which make up the Experiment Station and research. I have been connected with the Station for quite a while, and I candidly feel that the money that the state has expended has been profitable to the state, and that it is yielding a very big dividend in the way of returns for the money expended, and that we need not be ashamed of our accomplishments. I recognize that there are many, many problems still unsolved. New problems come up faster than we get them solved. Conditions change rapidly, and we have to revise the things that we have got to use, and have to discard a good many of them. You younger men that are coming along are fortunate that a good many things we thought we thought we knew are discarded, and you can start on a better basis.

I see in this audience some people who were in the first Horticultural Society meeting that I referred to, so in some respects we are meeting in the third generation of horticulture. The group changes about every 25 years completely, but I look forward to the time when Maryland

is going to be a still greater horticultural state. We have the soils, we have the markets nearer to us than I believe any other state in the East, and we ought to keep pressing forward, improving every opportunity to make our horticulture on the big, outstanding basis it should be on, and I believe with the dividends that I have mentioned at the Station, and all coöperating to one end, that the future has great things in store for horticulture, and that we are going to see horticulture one of the big and oustanding things for which the state is well known.

I thank you very much for giving me your attention for this rambling talk. I want to pledge to you that the Station stands ready to help you in every problem that you have, and we want you never to hesitate to bring your problems to us, and we will give you the best help that we possibly can. (Applause).

PRESIDENT HARRISON: You have heard a lot about pollination from time to time. We have a very timely subject tonight, "Directions for Fruit Growers Relative to the Proper Care and Management of Bees for Cross-Pollination." This address will be given by Mr. E. L. Sechrist, of the U. S. Department of Agriculture.

DIRECTIONS FOR FRUIT GROWERS RELATIVE TO THE PROPER CARE AND MANAGEMENT OF BEES FOR CROSS-POLLINATION

MR. E. L. SECHRIST, U. S. Department of Agriculture.

Mr. President, Ladies and Gentlemen:

We know that honey is of considerable more value than other sugars in human nutrition, but we haven't been able to find out just why that is. There are all sorts of theories, but we don't quite know.

I have come to you people here tonight—I am carried on the rolls at Washington as a scientist, yet, I come to you as a practical beekeeper. I can't go back quite as far as Dr. Patterson, but I have been working with bees for about 45 years. I grew up with bees near Medina, Ohio, where the Root Company have their headquarters. My first work

away from home was keeping bees, and I kept bees in Ohio, Indiana, and I finally became more interested perhaps in the behavior of bees in different countries and different sections, so I spent more than six years in the tropics, in South Africa, in Haiti, and in the South Seas. I had as many as 2,000 colonies of bees in Haiti. Just before the war I was in California 7 years, a commercial beekeeper there, and came from there to Washington to help out on honey production during the war. That is just a little bit of my bee biography.

I saw, of course, a good deal of work in pollination in California, found out how necessary it was there, and I just received from California yesterday a publication, a state bulletin that has in it two or three things I want to give you. It is an article by the State Entomologist on bees, their importance, and their diseases. Of course, he says, like almost everybody does now, that the bees are of more value to the horticulturist than they are to the beekeepers themselves, and that is particularly true in regions where there are a great many orchards, because those are not likely to be first-class beekeeping regions. There are various reasons why that is not the case, but that is usually the case. Maryland is not a great honey-producing state, particularly for comb honey. That does not mean that there are some sections that are not good. There are sections in the State that are good honey-producing sections.

MR. B. B. JONES: I agree to that. That isn't the statement I took issue with.

MR. SECHRIST: I have myself in Washington, 70 sections of beautiful comb honey. Even that seventy sections of comb honey is not a honey crop according to the commercial honey producer who counts his colonies by the thousand and produces honey by the ton, carloads. He'd not be satisfied with less than 100, and he wants 200 and is likely to get it, if he considers it a good honey location.

The Entomologist for California has gone over a list, which includes nearly all the fruits, nuts, vegetables (there may be a few he has left out), berries, and he says, "To this list many more names can be added." He says also, that

bees outnumber all native visitors to blossoms by 100 to 1, and that they increase the per cent. of fruit over where there is no pollination by insects from 300 to 5,000 per cent.

I don't think there is any necessity of telling you people that bees are necessary for pollination. At any rate, that is not the subject which has been given me. I think you are convinced of that. What you want to know is how to keep bees in orchards; what is the best way. I am not sure I can tell you what is the best way, but I can give you some hints that will help you to find out the best way. What is the best way for one man is not the best way for another. What is the best way for one state is not the best way for another state. There are general principles of beekeeping and bee behavior which are the same under identical conditions everywhere, and what one must know are those general principles, and then those must be adapted to your own exact conditions, your own locality, which may be entirely different from a locality ten miles away.

That may look like rather a serious problem, and perhaps it is, because we know that the great majority of people who start bee keeping fail. Bee keeping may be simple, but the great majority of people who start in make a failure of it, because they try to follow what somebody else has done instead of learning the basic principles.

Now, for the orchardist who wants to keep bees for pollinating blossoms on his trees, he may not want to, he may not be able to, it may not pay him to do anything more than to keep bees that will do his work. It may not pay him to try to produce honey. Perhaps he can find some man who is interested in bees, some professional beekeeper who will take care of his bees and produce a crop of honey, where he would lose out by trying to produce a crop. He may be able to use his time more effectively by taking care of his own specialty, and only using the bees for the work that they do for him.

So that makes two conditions which the orchardist must face—whether he will keep the bees for the sake of keeping bees, or whether he will keep bees merely for the sake of his orchards. They bring up rather different problems,

those two phases. If he keeps bees for the sake of his orchard only, then all he wants to do is to have sufficient bees at the right time to pollinize his blossoms. If he keeps bees for honey also, he must not only have bees at the time for his blossoms, but he must do the rest of the necessary things toward producing a honey crop. They are not always the same.

I think I shall go over just briefly a few of the points which the orchardist should consider, and you people can ask questions afterwards, or if you have any questions that won't wait until afterwards, you can ask right away, and I will be happy to try to answer them. You won't interrupt me, because I have no set speech.

One thing that has been brought up is the value of the right kind of colonies, the number of bees. What is needed is a maximum number of bees at the time for pollination. That brings up immediately the question of wintering, and that goes back to the season before. If you don't have a big colony of bees in the fall, you can't expect a big colony of bees for the time of fruit growing in spring. A weak colony of bees in the fall will be weak or weaker in the spring, and it will not become a strong colony ready for work until after your fruit bloom is all gone, and neither will it produce honey, because it won't be ready in time for the honey flow.

Suppose you have some bees in your orchard. What are you going to do? What will you do the first thing in the spring? You will make an examination as early as you can, and for what reason? To find out how many colonies are alive. Probably some are dead. Those hives where the bees have died should be cleaned up. The dead bees should be cleaned out, the hives taken inside and closed up and cared for until you can use them again. You don't want to leave them out in the orchard or wherever you had them during the winter, because occasionally there is a disease that gets in, occasionally brood diseases come among the bees, and if brood disease gets into honey left in the hive, the other bees will rob that honey and spread the disease among the rest of the bees. Bees are great robbers. So merely as a matter of precaution against disease, if for

no other reason, no hives where the bees have died out should be left exposed to other bees. They should be taken care of.

The next thing you look for is the weak colonies, and why they are weak. Probably some of them have lost their queens. If so, they will be of no value at all and had better be united with some other colony. If they are too weak to build up, they will not be much good for your purpose. You can merely leave them in the winter quarters and let them build up, and not bother about them all summer. Or, you can unite them if you have more than you need, with some other weak colony and make it stronger. But uniting is a poor remedy at best. Usually the bees in a united colony are all old bees, and they cannot do the work that a colony of equal strength of young bees, or a normal colony would do. So uniting is not always as successful as one would expect it to be. Too often two colonies that are united in a short time will became as weak as either of the original colonies.

But you have to take care of those weak colonies. You have to see that the colonies are healthy; that there is no disease. You need to learn how, or have somebody who knows how, look at your colonies occasionally and see that there is no brood disease. Fortunately, Maryland is not badly infected. Weak colonies, dead colonies, queenless colonies —all those must be taken care of.

Your normal colonies, your strong colonies, are the ones that are your hope for pollination. They are the ones that need the care.

The care they need largely consists of two things: a proper amount of room, and enough stores. There is one thing more that should be mentioned, and that is good worker combs. Combs that are old—I don't mean old by age, but combs that are useless because of some injury are worse than useless in that colony. A colony that may have 10 or 20 combs may only have 4 or 5 that are really available. People wonder why colonies leave, and if you will examine the combs you will find many of them have sagged until the cells are out of shape, and there are only a few

that are good. One of the greatest losses to American beekeeping is poor combs. If the quality of the combs is not good, they need to be replaced either with good combs or with full sheets of foundation—not part of a sheet, but full sheets of foundation.

Those things, food, good colonies, and good combs are the things you need to look for in the spring. Colonies of that sort that have plenty of room, plenty of food, plenty of comb, and plenty of bees, will build up and be useful in pollinating. That is the early spring work.

From then on for some time under normal conditions with some nectar coming in, there isn't very much that needs to be done. An occasional inspection of the entrance will show to the beekeeper whether things are all right. To the man who desn't know much about bees, a look at the entrance may not tell very much, but most people have a fair amount of judgment, and a fair amount of common sense, and if you look over 10 to 50 colonies of bees and you see them all behaving about alike except one or two colonies, then what would you conclude? Immediately you'd say that there is some reason for those two colonies not behaving like the rest. The rest are probably normal, and there is something the matter with those two colonies. That is what you will get from your inspection. You may not be able to tell what it is, but there is a chance for you to find out if you are working with the bees, to investigate those colonies and see what the trouble is.

That is the principal thing that will go on after the first early spring inspection, this occasional look at the colonies to see how they are behaving. If you find anything that is not normal, then open up the colony, if you are going to do that work, and find out what it is. I can't go into all those details. Those have to be gotten by whoever is doing the work by studying books on bees and reading the Department bulletins.

Then, when the colony grows stronger, additional room is needed. How can you tell when a colony grows stronger? By the number of bees that are flying, largely, and when they get stronger than they ought to be they will begin

to be crowded out a little bit. But they should be given more room before they begin to get crowded out. One of the things you need to learn is when the colonies are strong enough and need more room. It doesn't take much of an inspection to find that out, just turning up the corner of the cover a little bit. If the whole top of the hive is a seething mass of bees, they ought to have more room right away. They are getting crowded. If they are building out little bits of wax past the cover they are getting crowded and more room needs to be added.

Those are just a few points about building up the colonies. You can do a lot more work than that, and a professional beekeeper would do more. I am talking now of the man who is going to have some colonies of bees in his orchard and wants to know how to operate those bees for pollination. He isn't working for honey. He is merely working for pollination, bees that will do his work, and he wants to do as little work with his bees as he possibly can because he has other work to do that will pay him better. So he will merely watch those colonies and see that they are built up as best they can be, leaving them to their own devices, and just taking care of them with the least trouble he can to keep them in condition, and let them build up into their maximum strength themselves.

Now the bees are getting strong. Your fruit bloom has passed, and it is the time when the bees are beginning to store some honey, and about that time swarming will come along under normal conditions. The professional, commercial keeper, does not want his bees in a normal condition, The normal bee colony is like scrub stock or scrub trees of any kind. It will live, it will reproduce itself, it will make honey enough for itself to live on, but it doesn't produce commercially. What the commercial beekeeper wants is the abnormal colony which he has made himself abnormal, made it unusually strong, and made it strong just at the time he wants it.

The orchardist probably will not want to take that much trouble and time on those bees. He can't afford it. He had better keep a few more colonies and scatter them a

little more in his orchard. So he will have some swarming. He will not want to do a great deal of swarm control. There are good swarm control methods which can be practiced if one wants to do it. The easy thing to do, and the thing that is practical, is to give the bees plenty of room, and then they will swarm some anyway.

If he wants to take as little care as possible of those bees, and yet, take enough care, he will hive these swarms that he can get in new hives, or in some of the empty hives where the bees have died out during the winter previously. He will save what swarms he can.

Now, when a swarm issues it leaves behind in the old colony a queen cell where a young queen will emerge and go out to mate. Occasionally these young queens are lost in the mating and never come back. Occasionally they prove to be drone layers. In such a case, this colony would weaken and in time perish.

Where this natural swarming comes, as it will where there is not enough care taken, there will always be some colonies that will deteriorate and become queenless and become useless during the season. The orchardist must look after these colonies often enough to find out about that. If he finds a colony that is queenless, he doesn't want to fuss with it probably at all. If it is growing weaker, he will just unite it with some other colony and put that hive away until he has use for it. He probably can't take the trouble, probably doesn't have the time to trouble to buy new queens or introduce new queens. He will prefer to have all the colonies he needs, so if a dozen or so do die out during the season he will have plenty without them.

That is a rather rough and ready method of beekeeping, but I think it is the practical thing for the orchardist. It is the least work that he can do that will take care of the colonies until fall comes.

When fall comes there are a few things that must be done again in preparation for winter. You must go carefully over all these colonies and see what condition they are in. If the orchardist doesn't know, he'd better have a little help from some professional beekeeper. He must go over

the colonies. He will find some that are useless, that won't be worth wintering. He will find some that have more honey than they need, some that have less honey than they need. It means equalizing stores and seeing that each colony has sufficient honey to carry it through until spring. If it hasn't enough it needs to be fed some sugar syrup. We don't advocate feeding honey. It is better to feed sugar syrup. But it needs to have from 40 to 50 pounds of stores, at least that much, to go through until the next spring.

That is about all there is to it. Colonies that have a young queen and have plenty of young bees in the fall and that have plenty of food stores will come through the next spring as good, strong colonies. If they don't, there has been some slip-up somewhere in those few things. Either the queen was poor, or they had too many old bees and not enough young bees in the fall, or they didn't have enough honey, or it was of a poor quality.

As an insurance for good wintering, we think it is wise to feed each colony about the end of a brood season, which comes probably early in October, 10 or 12 pounds of sugar syrup, two parts of sugar to one part of water. That will be stored in the center of the brood nest and will be used during the coldest part of the winter when the bees must have good food or suffer. There is usually some poor honey gathered in the fall such as honey secreted from plant lice that contains material which the bees cannot digest and which is dangerous winter food. So we advocate as insurance against winter loss, the feeding of 10 or 12 pounds of sugar syrup to each colony in the fall. This poor honey is perfectly good any time when the bees can fly, but when the bees cannot fly and they become filled with indigestible material they acquire dysentery and die. That is always the result of poor food combined, of course, with winter weather.

That is a rough outline of the things that I think are practically necessary for the man to do who keeps bees in orchards entirely for pollination purposes.

We have in the Beekeeping Section of the Department of Agriculture, various bulletins, primary bulletins on bee

keeping, bulletins for the honey producer, instructions on swarm control, and just the things I think that you will need. We also send out a circular giving a list of books on beekeeping, some general food advice, and a list of all the publications that we have on beekeeping, and the journals. Those are obtainable easily, and we are always glad to answer any questions that any one asks. If any of you wish to write in, merely write to Bee Culture, Washington, and we will get it. Ask your questions, and we will send you the best sort of an answer we can.

Now I will be glad to answer any special questions that some of you people have come up against that I haven't covered or haven't covered satisfactorily, that you'd like to know.

MR. ALLEN: How do you feed the sugar syrup?

MR. SECHRIST: Have the water hot and stir in the sugar and see that the sugar is thoroughly dissolved. You can boil it if you want to. Then put it in a ten-pound pail with a cover and punch a dozen or fifteen holes in it a little smaller than shingle nail size, turn it upside down over the frame, and let the bees come and get it, which they will do very quickly.

QUESTION: Isn't that a temptation to the other bees to rob them?

MR. SECHRIST: You put it inside the hive and put the cover on.

MR. B. B. JONES: If the hive is weak they will rob them.

MR. SECHRIST: If the hive is weak you should shut up the entrance. As Mr. Jones says, they will rob a weak colony, and it is always well to close up the entrance so a half inch or less is left. It is best to put this feed on, not in the morning, but in the evening, so everything will be quiet. When you are turning the pail upside down, don't spill syrup all over the place. Turn the bucket upside down so if any spills it will go down among the frames. Little bits of sugar syrup scattered around that time of fall are dangerous things.

MR. HERSHEY: What do you think of sugar feeding in candy form?

MR. SECHRIST: It isn't worth the trouble. You can do it if you like, but they will take the syrup more quickly. Candy is valuable if you must feed in very cold weather. This syrup must be fed before it is too cold. Hard candy is valuable if you must feed the colony in cold weather in the winter time for safety. You can put that candy in the hive, cover it up, and the bees will eat it as the winter progresses. That is all the use I have ever had for candy.

MR. HERSHEY: How about a mixed brood of bees?

MR. SECHRIST: I would not want bees of a mixed brood because there are likely to be cross ones among them.

MR. HERSHEY: I mean in regard to ability for pollination.

MR. SECHRIST: There are many people who think that Italian bees are more active. They are better robbers. They will get out when some other bees won't But the principal reason for having pure stock is their gentleness. You want bees that are in the orchard fairly gentle. You don't want them to sting without much provocation, and pure Italian bees will be more gentle than the mixed brood.

MR. ROY SMITH: What about orchards that are sprayed heavily with arsenicals?

MR. SECHRIST: That is a serious problem. A great many bees are killed by that. Where that is practiced extensively about the only solution is to keep the bees at some distance from the orchards where no arsenicals are used. Move them into the orchard during the time of blooming and remove them before the spraying is done, because even though spraying is not done until after the blossoms have fallen, where there are extensive orchards there is always enough spraying done on trees that are in bloom to poison many bees. The poison also falls on the cover crops under the trees and the bees become poisoned from that. Dusting particularly is dangerous because the bees carry home the dust in the pollen, deposit it in the combs, and weeks afterwards colonies of bees may die from arsenical poisoning. Even though the mature bees are not killed the brood will be killed by the poison.

MR. ALLEN: I have a few hives now, and some of them made 85 to 100 pounds. Would you keep on filling those up, or what?

MR. SECHRIST: If that honey isn't needed, I'd take some of it this fall, unless you expect to need it to save some of your colonies in the spring. It is always well to have some extra honey to use in the spring time, because in spite of all the preparation you do in the fall some colonies may run short of honey in the spring. You may have an unusually bad season when there is not going to be much honey gathered, and there is not enough comes in from fruit bloom to pay the beekeeper for the work with the bees. He doesn't get a crop from that, and often some honey is needed. Almost every year a man who has a dozen or 15 or 20 colonies will find some colonies which for some unforseen reason will gather quite a surplus, and he ought to get much more than he wants for his own use if he has 10 colonies of bees.

MR. ALLEN: When you are going to take the bees out of the orchard after the pollination season is over, how far is it necessary to remove them?

MR. SECHRIST: That brings up a question which I haven't touched on and which is important, the moving of bees from one orchard to another and moving them out.

If you have bees in an apiary, it is comparatively easy to move them a short distance without much difficulty, but if you have them as you have them in an orchard, scattered over the whole orchard, one or two colonies to an acre, then move them out, and move them only a half mile or so, you are going to have trouble, because lots of those bees will go back to these isolated locations, where, if you had them in a solid block they'd go back to this general location, and then you could leave two or three colonies there to catch those returning bees and save them.

In general, it isn't well to move bees less than one mile from their location. Move them about a mile and a half and you will not lose very many bees. But to move them a half mile or a few hundred yards is not very safe. You will lose quite a lot of bees. It may not be a great loss.

If you move them when the honey flow is over, or if you move them in the fall out of the orchard after the brood season is over, there isn't much loss even if thousands of bees do go back to the old place, because those are old bees which will merely consume honey and will die before the winter is over anyway. So I wouldn't hesitate to move bees out of an orchard along toward fall, and move them to winter quarters a short distance away, because those bees you lose are nearly all old bees, only honey consumers and are of no value to the colony.

Moving bees is another thing that may be easy or hard according to how you make it. It is growing to be the practice among a lot of beekeepers to move the bees at night without closing up the hives, leaving the entrances open. The hives are put on a truck and hauled away. A few bees will crawl out, not many. If you do close them up, particularly if the hives are a little old and warped, you won't get all the cracks closed up tight and some bees will come out anyway. They worry less if the hives are left open and then there is very little danger of the bees smothering as might happen if you closed them up and did not give them top ventilation.

So there is a growing tendency to move them with the entrances open. Pick them up and set them on a truck. That does away with the trouble of shutting up the hives and then opening them up again. You can do it in the evening after the bees have stopped flying. Move your bees to a new location, set them down, and it is all finished.

QUESTION: How many bees do you need for pollination?

MR. SECHRIST: If they are well scattered through the orchard, one colony per acre, or two colonies. It depends on the season. Some seasons one colony of bees would not pollinate all the trees. There are seasons when there are very few flying days.

QUESTION: Is there any special time you have to move the bees into the orchard prior to the blossoming of the trees?

MR. SECHRIST: No, just so they are there at the time of blooming. It doesn't take them long to get themselves ready to go to work.

QUESTION: What size opening do the bees require for air in front?

MR. SECHRIST: An opening about as big as your little finger.

QUESTION: Way across the top?

MR. SECHRIST: One opening as big as your little finger would be plenty, but to prevent having that one little hole shut up we usually have two or three of that size. Two or three of that size are plenty; during cold weather an opening three-eighths of an inch high and an inch or two long is all that is necessary, but that is not enough when warm weather comes.

MR. B. B. JONES: They should be small enough to keep the mice out.

MR. SECHRIST: If the mice are bad sometimes people use a wire screen through which the bees can pass but through which the mice cannot pass. Or a few nails driven along in front of the entrance will keep the mice out.

MR. ALLEN: Does the operation of moving a hive of bees hurt, when you need them for pollination, if you move them from winter quarters to a peach orchard or to an apple orchard and then to another in a relatively short time?

MR. SECHRIST: It doesn't hurt them in the least, rather, in many cases it seems to give them an added impetus to do more and better work.

MR. B. B. JONES: Doesn't that depend on how far one orchard is from another?

MR. SECHRIST: That is what I mentioned a while ago. If you move them a half mile or a quarter of a mile you will lose bees just at the time you want them for pollination.

This can be done if you have time. If you have them in one orchard and want to move them into another and have a week between, you can move them, make a double move. You can move them two or three miles away and

then let them stay there until they are oriented, and then move them back, no matter how near the old location. That can be done, and in that way you are not losing any bees.

MR. ALLEN: I'd like to ask one more question about moving from winter quarters to a peach orchard that is not quite a half mile away, and then moving them three or four miles. Would the first half mile be safe without orienting them?

MR. SECHRIST: As Mr. Jones says, at that time of the spring you will probably have some bad weather. If you move after the bees have been shut up for a day or two, or when they are going to be shut up a day or two, move in rainy weather, it is pretty safe. Few bees will go back. If you move them when the bees are out flying every day, many will go back. However, it is well to leave a half dozen or so of the weak colonies that are no good to you in the orchard and let the bees that come back go to those and strengthen them and make good colonies of them. You will save the loss of bees that way.

MRS. HARRIS: Do you have any information as to the spread of pear blight?

MR SECHRIST: The Ohio Experiment Station did a lot of work on that, and it is quite definitely proven that bees are not a serious offender in spreading blight. It is possible that they may carry blight, but most all of it is done by other agencies. The best thing to do is to get their bulletin.

MR. B. B. JONES: That question was thoroughly fought out in California about 1904 where the beemen and the pearmen were having a fight and one threatened to throw the other out and the other threatened to kill the bees, and the other threatened to come back with some more dire calamities, and they wound up by deciding that the bees did more good than harm.

QUESTION: If you had an apiary right on the edge of a square mile orchard, would it be necessary to move the bees into the orchard in different places?

MR. SECHRIST: If you could be certain you'd have all sunshiny days during the time of bloom it probably would

not. If you can guarantee the weather, all right. If you can't, it is best to move some bees inside.

PRESIDENT HARRISON: I notice in the audience a very prominent national educator, and I'd like to take this opportunity to call on Dr. Pearson, President of the University of Maryland, of Baltimore and College Park, for a few final remarks.

ADDRESS

BY DR. RAYMOND A. PEARSON,
President University of Maryland.

Mr. President, Ladies and Gentlemen:

I thank you for the honor. It is a year ago I met you in this same room, but I was thinking tonight that that year seems almost like a day. It seems almost as though it were last night I was here. If that proves anything to me, it proves my first year's work in the State of Maryland has been exceedingly interesting and happy so far as I am concerned, and I am glad to take this occasion to thank you, and I wish I could thank all of the people of Maryland for the kindnesses that have been extended to me, the tolerance that has been shown now and again. I look forward to my work in the time to come with even greater pleasure than I could do a year ago.

I have been greatly interested in these addresses I have heard tonight. Professor Sechrist has given us some high points on the bee business, and he finally, after talking a few minutes, said, "That is about all there is to it." He reminds me of a distinguished sculptor who was working on a job when a lady passed near him and said, "It must be easy to be a sculptor."

He said, "Yes Madam, it is. All you have to do is get a big stone and a chisel and a mallet and knock away the stone you don't want!"

I was interested in Dr. Patterson's remarks and the early history of this organization. When he was talking about those old leaders, I couldn't help but think of how true it is that as we go along we are building for the future, little

though we realize it, and that brought to my mind some lines I used to know that I like very well:

"Isn't it strange that princes and kings
And clowns that dance in sawdust rings,
And common folks like you and me
Are building for Eternity.
Where each is given a bag of tools,
And a mass of material
And a book of rules;
And each one must make before the day has flown
A stumbling block or a stepping stone."

The names that Dr. Patterson mentioned tonight, the names of men who are in this room, are those who have been building stepping-stones. I wish I could express in words the tribute that I feel in my heart for Mr. Cohill, for Mr. Hanson, and for some of these old war horses who have not only laid the foundation of stepping-stones, but are still with us and are highly honored by the younger ones who come along in the later generations.

And now, to begin with this New Year, I want to better than just wish these old leaders who are respected so greatly, a longer period of continued activity and leadership. More and more will we revere them and their work.

PRESIDENT HARRISON: If there is nothing else to come up before the meeting tonight, we will adjourn.

(The meeting adjourned at nine-forty o'clock).

WEDNESDAY MORNING,

January 4, 1928

The Fourth Session convened at nine-thirty o'clock, President Harrison presiding.

PRESIDENT HARRISON: The meeting will come to order.

First, we have on the program "The Control of Rodents in Orchards," by Mr. A. F. Vierheller, of the University of Maryland, College Park.

THE CONTROL OF RODENTS IN ORCHARDS

A. F. VIERHELLER,
Extension Horticulturist, College Park, Maryland.

Mr. President and Gentlemen:

I don't know whether you folks have noticed it or not, but it seems to me that the mouse question at the present time in Maryland, is rather serious. The term "rodent" refers to any animal that has gnawing teeth, sloping front teeth with which they can gnaw.

The rodents that probably interest the grower are groundhogs, rabbits, and mice. The general control of these rodents is largely taken care of by weather, local conditions, drought, food supply. It seems right now that we are at the top of a cycle where these rodents seem to have multiplied a little too rapidly for the good of the orchard man.

I think we needn't waste much time on groundhogs. They sometimes will injure a tree here and there by burrowing under it and chewing off the roots. Some of their injury is along the tree trunks, a sort of bite here and there which lacerates the tree trunk. The control is very simple. Merely take a handful of rags soaked with carbon bi-sulphide, plunge it down the burrow, cover it up, and that is the last of the groundhog.

Rabbit control is a little more difficult. I don't know that we can recommend that every grower go out and put screens around every tree in his orchard, or even along the edge of his orchard. The whole point I want to bring out this morning in the discussion of rodents is that we must give our trees inspection often enough to know what is going on out there. If we see a tree injured here and there in the orchard, then it is the time to begin control methods. If it is rabbit injury, let's go after rabbits. If it is mouse injury, let's make war on mice.

There are some repellant washes which have been suggested for the control of rabbits, one according to the Pennsylvania fruit men has been giving fairly good results. It is not a poison, but a repellant. There have been lime sulphur washes, and animal blood and creosote, and coal tar,

and soap suds, and a few other things recommended, but they don't last long. They wash off, and if a rabbit is hungry, I don't think he is going to stop at a little coating of whitewash or soap suds.

About the only thing we know for the control of rabbits is wire screen. In Missouri, where they have had quite a little trouble with rabbits, they have recommended poultry wire 18 inches wide and ½-inch mesh, cut in 18 and 20-inch lengths and put around the tree. It lasts for several years. Just put it around the full 18-inch circumference and wire it together and leave it there until the tree is 8 or 10 years old. That is about the only suggestion we have to offer on rabbit control, except shooting them and trapping them. Poisoning has not proved very effective.

Coming to the question of mice, which is, I think, the most serious, we first want to understand that there are two kinds of mice, field mice and pine mice. They live, of course, on roots and green stuff mostly. I don't know that any one has ever found that they live on anything else except roots and herbs. They do injury at most any season of the year, so you don't want to think that you are ever secure from mouse injury, whether it is summer, spring, fall, or winter. Their breeding season is from along in February and March until the following October. At the present time you'd find mice in the burrows rather quiet, although they stir around, and now would be a wonderful time to poison mice. Poison is about the only control we know.

There have been some glass poison stations suggested and manufactured. There are some out now that cost about 12 cents apiece. There are wooden poison stations, which can be home-made. Drain tile and such things have been suggested and used.

If you use a poison station, be sure to conceal it pretty well with grass and trash. Cover it up.

Coming to a little more specific control of the long-tailed mouse, or the field mouse, about the best method that we know is to tear the trash away from the base of the trunk of the tree, probably a foot or so out from the trunk of

the tree, and you will pretty well control the field mouse. He doesn't burrow very deeply, probably a couple of inches. His burrows are very shallow, sometimes right on top of the ground under the grass. He usually does the damage at the surface of the ground, and maybe an inch or two below. Very often they will nibble a tree just as clean and completely as if you had sandpapered it.

Poisoning, of course, will get these mice if you can find their nests and burrows and sprinkle a little poison grain along them.

The pine mouse is a little different proposition. We don't know that cultivation will control him. Cultivation may, on the other hand, cause him to dig deeper in the soil and work on the roots, because if you have destroyed grass and roots on top of the ground he may go deeper for food. On the other hand, you may cause him to migrate from the orchard into the next field or some place else, so we mustn't think that cultivation is any real panacea for pine mouse control.

I know of several cases where they have controlled mice very well by merely using some of these poison grain mixtures, going out and finding the burrows of the mice, putting a teaspoonful or less in each one you can find around the trees, and leaving it there. That doesn't mean that you can go out once a year and do this; it means a constant job the year around examining your trees and watching these mice. Poison stations do not require such close attention but should be examined often.

You may go out and try grain bait or dry bait and it may not work. If it doesn't, try some wet bait. It is the usual procedure to start in with dry grain bait first, and if that doesn't work, try some sweet potato bait, or use carrots instead; something succulent and juicy, or, the alfalfa mixture might be pretty good.

I don't know that there is anything else to add to this subject, I know that there are several members present who have had experience with mouse injury and have pretty well controlled it, and I would like to have some of these gentlemen get up and give us their experiences. I have in

mind Mr. Long, who was telling me a while ago of an experience he had with mice where he completely cleaned them up with arsenic and wheat by merely dropping it in the burrows.

If there are any questions, I will try to answer them.

MR. LONG: Isn't there a law prohibiting poisoning in orchards?

MR. VIERHELLER: Not that I know of, Mr. Long. The question came up not long ago in Baltimore County. One gentleman up there has an orchard which he is afraid to poison because the neighbor's turkeys come over there. It seems to me the logical thing to do is to tell your neighbor that you are going to poison your orchard and have him keep the turkeys out.

MR. LONG: I understand some steps were taken to that effect—to get a law prohibiting poisoning in a place where it can be picked up by game or anything else.

MR. VIERHELLER: That is what I like about poisoning in the burrow. You get it underneath the ground where it isn't seen by anything above ground.

MR. O'CONNOR: I'd like to have the speaker explain a little more about the glass bait traps. He can perhaps do it better than I can, although we have a thousand on one place. We broke but very few, and find them very successful.

As far as turkeys coming over on a man's property, as I understand it, they are trespassing. We have a law that no stock shall trespass, and turkeys are no different from anything else when it comes to trespassing as far as that goes. And if dogs come running around prowling, it won't hurt them to get the poison the same as the mice.

I have tried those glass traps, and they work very satisfactorily and there is no chance for turkeys or anything else to get into them. We have no trouble with them that way.

Another thing, where the mice burrow into the ground, or any other animal for that matter, I am using a poison that I shoot into the ground, carbon bi-sulphide.

The trap illustrated on the blackboard is something on the order of the glass trap we use. Mr. Littlepage has quite a number of them, and they work very nicely. There is no chance for water to get into them, and the mice can go in there and eat the poison. Once in a while we will find one dead, but most of them die out around the field. Those are very fine things; I can vouch for that.

MR. VIERHELLER: These are made by the Rodent Destroyer Company, in Washington. They have an office in the Southern Building. I think they cost about 12½ cents apiece. That is what they were last year. The principal thing is that they slope this way (illustrating); no rain can come in, and the mice can get in there and feed and come out again without any trouble.

The whole thought I want to leave with you is that poisoning isn't any seasonal operation. You must keep on the job the year round, and keep after mice. Don't be discouraged if they don't take the bait here and there out of the burrows or poison stations. If it isn't gone, probably they will dig through some place else and you poison them again. These mice use the same burrow over and over again. They don't dig one burrow and never use it again. They use it for a runway. Mr. Silver, of the U. S. Biological Survey, has told me of cases where pine mice have gone from one tree to the next underground.

I am not going into the cures of damaged trees, because that is another proposition. Grafting is a subject in itself, and we can't discuss that. I did have some rather good pictures I wanted to show, but the machine won't take them. If any of you are interested in looking them over, I will be glad to show them to you. I will be here all day.

I shall be glad to send copies of poison bait formulas to anyone that you think would be interested.

Poison Bait for Mice

Formula No. 1—

Strychnine (sulphate) .....1 ounce
Hot water .....2 gallons
Alfalfa (chopped or leaves) .....30 pounds
Dissolve the strychnine in hot water and sprinkle over the alfalfa previously moistened with water. Thoroughly stir until the liquid is absorbed by the alfalfa.

Formula No. 2—

Strychnine (sulphate) .....1 ounce
Boiling water .....2 quarts
Laundry starch .....2 table sp.
Oats .....1 bushel
Cold water .....½ pint
Dissolve strychnine in boiling water. Dissolve starch in cold water. Add the starch to the strychnine solution and boil a few minutes till starch is clear. Pour the solution over the oats in a metal tub and stir thoroughly. Let grain stand over night to absorb poison. A teaspoonful or two should be put in the caches or along the runways and in the entrance of the burrows.

—From *Fruits and Gardens.*

Rolled-oat bait—The following preparation has been designed to meet the requirements for use as permanent bait in poison stations or caches, and it has also proved highly satisfactory for general use:

—Mix together, dry, ⅛ ounce of powdered strychnine and ⅛ ounce of baking soda. Sift the strychnine-soda mixture over one quart of rolled oats, stirring constantly to insure an even distribution of the poison through the grain. Thoroughly warm the poisoned rolled oats in an oven and sprinkle over them 6 tablespoonfuls of a mixture of 3 parts of melted beef fat and one part of melted paraffin, mixing until the oats are evenly coated. When the grain is cool it is ready for use.—

If larger quantities of the bait are needed, use in proportion of one ounce of strychnine, 1 ounce of soda, 8 quarts of rolled oats and 1¼ pints of the beef-fat-paraffin mixture. In applying the coating it is very important that the beef-fat-paraffin mixture be hot and the poisoned rolled oats thoroughly warm, otherwise it will not be possible to obtain an even coating.

Teaspoonful quantities of the poisoned rolled oats should be placed in the small containers or stations described, well distributed over the infested area. The poisoned bait may also be scattered along runways and within entrances of burrows, a teaspoonful at a place.

Starch-coated grain bait—Poisoned grain prepared by the following formula is adapted for treating forage-crop or cereal crop areas where mice are abundant:

—Mix 1 tablespoonful of gloss starch in ⅛ teacup of cold water and stir into ¾ pint of boiling water to make a thin, clear paste. Mix one ounce of powdered strychnine with one ounce of baking soda and stir into the starch to a smooth creamy mass free of lumps. Stir in ¼ pint of heavy corn syrup and one tablespoonful of glycerine. Apply to 12 quarts of wheat or to 20 quarts of steam-crushed whole oats and mix thoroughly to coat each kernel.

Steam crushed whole oats are preferable, as they may be distributed promiscuously over the infested area without endangering bird life. Wheat, however, should be placed inside the mouse tunnel openings, under dense cover, or in the poison stations described. Strychnine-poisoned grain will not endanger livestock if properly scattered.

Sweet-potato bait.—A convenient bait, and one well adapted for poisoning pine mice on small areas, is prepared as follows:

—Cut 3 quarts of sweet potatoes in ½-inch cubes. Mix ⅛ ounce of powdered strychnine and ⅛ ounce of baking soda and using a pepper box, sift this over the freshly cut potatoes, stirring the mixture constantly to distribute the poison evenly. Use the bait while it is fresh.

One or two pieces of the potato bait should be dropped into the mouse tunnel through the natural openings or

through openings made with the finger or a stick. Mole runways should be similarly treated in order to poison the pine mice which they usually harbor. After a few days the area should be carefully examined for fresh signs of mice, and if any are found the poisoning should be repeated.

—*Farmer's Bulletin* 1397.

Repellant Wash for Rabbits—

Fish oil 33⅓%
Concentrated lime-sulphur 33⅓%
Water 33⅓%

These should be thoroughly mixed. The tree is then painted from the surface of the ground up into the crotches and among the scaffold branches. Paint the young trees high because the rabbits work on top of any deep snow that may occur.

—From *Fruits and Gardens.*

PRESIDENT HARRISON: The next subject will be, "Desirable Spray Equipment and its Care," by Dr. W. S. Hough, of the Agricultural Virginia Experiment Station.

DESIRABLE SPRAY EQUIPMENT AND ITS CARE

BY WALTER S. HOUGH, Entomologist,
Winchester Research Laboratory of the Virginia Agricultural Experiment Station.

This is an age of inventions. Changes in machinery of all kinds are constantly taking place and at such a rapid rate that we can scarcely comprehend why many of the changes are made. The recent Baltimore and Ohio Railroad Exposition at Halethorpe visualized the stupendous development in transportation within the past century. Greater efficiency is the crying need of the business world. Farmers and fruit growers are in no way exempt from the same need, although in too many instances they do not yet realize it.

Profits depend on the percentage of high grade fruit produced. During the past fifteen years orchard plant-

ings have increased enormously in the Appalachian fruit belt from Pennsylvania into Virginia. This has increased the food supply for orchard pests. As the trees grow older the problem of insect control becomes more difficult. In short, we cannot spray as we did ten years ago and expect a crop of equal quality. We cannot spray as we did five years ago and remain the most successful among the fruit growers.

Bucket pumps and barrel sprayers had their day. The small sprayer with a one to three horse power engine served well for a time. The compressed air sprayers came and passed out of the picture. Today, we are witnessing the passing of the four horse power machine which pumps eight to ten gallons per minute. Modern orchard conditions require a machine with a minimum capacity of fifteen gallons per minute and a six horse power engine. In large orchards the fifteen horse power machines, delivering about twenty gallons per minute, are proving to be even more satisfactory. It is likely that a machine of this type will be the standard equipment in the near future.

But the size of the machine is only one factor influencing the efficiency of our equipment and the type of spray delivered. The spray may be too fine or mist-like, or too coarse or stream-like to provide an effective coverage. It must be of such quality to carry to the distant parts of the tree and settle on fruit and foliage in all parts of the tree. The drive must be sufficient to turn the leaves and allow the spray to wet them on the under side. To do this effectively and efficiently, the following factors must be taken into consideration:

1. *Pressure*:—The pressure maintained influences the volume of spray delivered and the spray drive, that is, the distance from the nozzle opening at which the spray will turn the foliage. It is the spray drive that carries the spray to the distant parts of the tree and to the inner branches.

To illustrate the effect of pressure the following examples are given:

Pressure	4 nozzles 1/12 in. discs. Gal.	Drive.	Double gun 1/12 in. discs. Gal.	Drive.
250 lbs.	6 5/16	12 ft.	4 1/8	11 ft.
300 "	6 3/4	15 "	4 1/2	13 "
400 "	8 1/8	17 "	5 3/8	15 1/2"

2. *Volume*:—Within certain limits the amount of spray delivered per minute will influence the spray drive. High pressure and small volume will not carry far. A large volume of spray carries farther into the tree because it is heavier and is less effected by air resistance. In orchard practice the volume of spray delivered should be from two to five gallons less than the rated capacity of the machine. This allows ample reserve. A machine which works without ample reserve cannot long continue to deliver a spray of high quality.

3. *Kind of Equipment*:—Hose—The diameter of the spray hose can be too small. For example, in a three-eighths inch hose fifty feet long there is a friction loss of 65 lbs., when the pump is maintaining a pressure of 300 lbs., and pumping 5¼ gallons per minute. This loss is decreased to 15 pounds in a $\frac{7}{16}$-inch hose and to 5 pounds in a $\frac{9}{16}$-inch hose of the same length. At 300 lbs., a three-eighths-inch hose cannot deliver over 3 to 4 gallons per minute without an excessive loss of pressure due to friction. Between 5 and 6 gallons is the limit for a $\frac{7}{16}$-inch hose and 8 or 9 gallons for a $\frac{9}{16}$-inch hose. Accompanying the loss of pressure due to friction in the hose or to "slippage" there is a corresponding decrease in volume.

Nozzles:—A nozzle with six holes in the whirl disc delivers a spray of desirable quality, which carries sufficient drive to turn foliage 12 to 15 feet from the nozzle opening at pressures of 250 and 300 lbs., respectively.

Nozzle arrangement:—For practical use, nozzles arranged in combinations of three and four to a head have been most

satisfactory. The three nozzle head measures about 7½ inches from center to center of outside nozzles. The four nozzle head is 10 inches from center to center of outside nozzles.

Size of spray discs:—Other factors remaining constant, the size of the spray disc opening is very important in determining the volume of spray delivered. In orchard spraying discs smaller than $\frac{1}{16}$-inch in diameter do not deliver sufficient volume. For a gun the minimum size is $\frac{1}{12}$-inch. Spray disc openings of $\frac{1}{12}$-inch are usually more desirable for nozzles on a machine of 15 gallons capacity. When the openings have worn to $\frac{1}{10}$-inch it is necessary to replace them with new discs in order to retain the deliverance of a high quality of spray.

4. *Equipment suitable for machines of various sizes*:—Nozzles and equipment have been tested and selected on the principle that one ought to use spray equipment which will deliver a generous quantity of spray to all parts of the tree. At the same time the spray must be of such a quality to form drops on the fruit and both sides of the leaves without hitting them with a heavy stream.

The data given is for pressures ranging from 300 to 325 lbs., and 50 ft. lengths of half-inch hose.

All nozzles used have six holes in the whirl disc.

I Spray machine of 8 to 10 gallons capacity (4 or 5 horse power). Use one of the following designated as (a), (b) and (c).

	Size of spray disc. Fraction of an inch.	Gallons per minute.	Distance of effective drive.
(a) 1 rod with 4 nozzles	1/16	4¾	15 ft.
(b) 1 rod with 4 nozzles	1/12	6¾	15 ft.
(c) 1 double gun	1/12	4½	13 ft.

II Spray machine of 14 to 15 gallons capacity (6 horse power).

Use one of the following combinations designated as (a), (b), (c) and (d).

	Size of spray disc. Fraction of an inch.	Gallons per minute.	Distance of effective drive.
(a) 7 nozzles as follows	1/16	8½	
1 rod with 4 nozzles	.....	.....	15 ft.
1 rod with 3 nozzles	.....	.....	13 ft.
(b) 7 nozzles	1/12	11¾	.....
1 rod with 4 nozzles	.....	.....	15 ft.
1 rod with 3 nozzles	.....	.....	13 ft.
(c) 4 nozzles and gun	.....	9½	.....
1 rod with 4 nozzles	1/16	.....	15 ft.
1 double gun	1/12	.....	13 ft.
(d) 4 nozzles and gun	.....	11¼	.....
1 rod with 4 nozzles	1/12	.....	15 ft.
1 double gun	1/12	.....	13 ft.

III Spray machine of 20 to 22 gallons capacity (10 to 15 horse power).

Note:—Any combination listed for a machine of 14 to 15 gallons capacity can be used on the large machine of 20 to 22 gallons capacity with equal results and supported by much greater reserve. In addition the following can be used, backed by ample reserve.

Use one of the following combinations designated as (a), (b), (c), (d).

	Size of spray disc. Fraction of an inch.	Gallons per minute.	Distance of effective drive.
(a) 8 nozzles	1/16	9¾	
2 rods each with 4 nozzles	.....	.....	15 ft.
(b) 8 nozzles	1/12	13½	.....
2 rods each with 4 nozzles	.....	.....	15 ft.
(c) 7 nozzles (Coarse spray)	1/10	15	.....
1 rod with 4 nozzles	.....	.....	15 ft.
1 rod with 3 nozzles	.....	.....	13 ft.
(d) 4 nozzles and gun	.....	13¼	.....
1 rod with 4 nozzles	1/12	.....	15 ft.
1 double gun	1/10	.....	15 ft.

I'd like to show a few slides to sort of illustrate what we are doing and to show the machine working. (Slide). Before we consider the other factors, I want you to look at a picture or two here which illustrates the type of spray covering that we desire to get on the apples for the best control of apple worms. That doesn't look like a very satisfactory cover, does it? It is sort of spotted, blotched, but nevertheless, you will find that that is the most satisfactory covering after all, because as I will show in the next slide (slide)—that is an enlarged picture of one of those apples showing the varying sized spots. Right here is what I meant to show you, the dark spot right there beside that large white spot. That is a dead worm, a dead coddling moth worm. In actual life that worm would be $\frac{1}{25}$ of an inch long. You see where it is, right beside the spot. It died there, because that is where it began to eat.

(Slide). There is another one, which shows up a little more. Here is your dead worm. Here is another one right here. Remember, these are enlarged many, many times, those spray spots there being rather small, and showing a very small portion of the apple.

I merely show those to bring out more clearly why we emphasize that type of spraying. These little worms apparently respond to the rough spray cover, and after all, that is what we are trying to do, to control the worms.

To get that type of spray requires certain equipment, that is, to get it most satisfactorily. It is possible, of course, to get it with most any equipment if the operation is carefully done, is discriminating enough in its use. For ordinary spraying (slide) this type of nozzle is a satisfactory type. There is an old-fashioned two-hole whirl disc. The nozzle of this six-hole type produces a very distinct type of spray which differs greatly from this type. This type is passing out entirely in our section of the country.

Now I want to show you the type of spray produced by a two-hole nozzle (slide) and a six-hole. Here is the two-hole set, the width of the spray. The distance at which the leaves will be turned from that nozzle there is about $3\frac{1}{2}$ feet. That is, about $3\frac{1}{2}$ feet out from here the spray will

turn these leaves and spray them on both sides. That, by the way, is a very important factor in efficient spraying. Now, that is a two-hole whirl disc with a given size disc, $\frac{1}{16}$-inch disc.

(Slide). Here the same disc is being used, everything being the same except that the whirl disc here is a six-hole, and you can see the difference. Here the leaves are turned at a distance of ten feet from the nozzle—going from 3½ feet to ten feet with this particular nozzle.

(Slide). Here is the two-hole again. Here is your two-hole whirl disc, here is your six-hole. See the difference? It doesn't give the wide spread, but it carries much farther, and carrying is what you want.

MR. TOWSON: Does that break with the same fineness in the small spray?

DR. HOUGH: That is slightly coarser, and that is also what we want because of the type of covering that I showed on those apples.

MR. TOWSON: Wouldn't it be more advisable in peach spraying to get that wider covering there? We don't have to throw the spray so far.

DR. HOUGH: In peach trees you probably would get as good work with this type of spray. However, you will find that with this arrangement here you can also get the covering which I wish to show you next. Not only is the type of nozzle important (slide), but now I want to show you the type of spray this six hole nozzle will produce when we set them up as we do in actual orchard spraying. Here we are. (Slide). Not only the type of nozzle is important, but the arrangement on the rod. This is a home-made outfit, but it works, using one-quarter inch gas pipe and putting nozzles on the end of the line. This spray covers very, very rapidly. It will carry in this particular case, 300 pounds pressure, using ½-inch disc, about 15 feet if the nozzle is right.

MR. TOWSON: Suppose you reduce that pressure, what effect would that have?

DR. HOUGH: Reducing the pressure to 250 pounds cuts

it down to 12 feet. It still produces the same quality of spray, merely cutting down the distance of the drive.

QUESTION: How does that compare with the gun— do you like that better than the gun?

DR. HOUGH: The gun will never produce the same drive, neither will it carry the spray. At the same time, you have the advantage here of an extra pole. If you are using a 6-foot or 8-foot pole, it adds that to the distance of the drive to get your actual effect of the distance of the spray from where you are standing. So you have a considerable advantage in the distance the spray can be carried, using this equipment. It is also, of course, more advantageous in rainy weather.

(Slide). Here is a side view of the same thing showing the angle at which the nozzle head is placed on the pole. That lifts the load off the operator.

(Slide). Here is the three nozzle head of the same type, just three nozzles arranged in a row about the same distance apart, producing the same type of spray. Of course, the distance of the drive is about three feet less, because you have one nozzle less. These nozzles support one another, and break down air resistance.

MR. TOWSON: Is that going to cover the apple from where it is, or are you going to get on the other side?

DR. HOUGH: You have to spray the tree on both sides, unless it is a very young tree, because ordinary bearing trees around 20 years of age have a spread of 25 to 30 feet. You can't spray any tree advantageously from one side unless it is a very small tree.

MR. TOWSON: Take a peach tree, for instance. We aren't all apple growers. What about coverage on that?

DR. HOUGH: I have never sprayed peach trees, so I couldn't give you first-hand information on that. I would think, though, that if it is anything like spraying an apple tree of the small size that if you step a little over half way on each side that you can give a very excellent coverage, because you can on apple trees.

MR. TOWSON: You have got to have a pressure to get past that peach fuzz, you know

The peach has a resistance with that fuzz that the apple doesn't have.

DR. HOUGH: Yes. (Slide). I just threw this picture in here to show you the difference between the gun and the nozzle on the quality, type of spray delivered. Here is a man up here that we consider one of the best if not the best operator of spray machines in Frederick County. He is trying to spray this part of that tree. He is doing it fairly well. If he can't do it, there is nobody who can. This man here is doing very well, but you see how he is spraying, how he is straining to get up here to reach the upper part of that tree.

(Slide). Here we are using these four nozzle heads, carrying the spray 15 feet from the tip of the nozzle with fine force to turn the leaves and wet them on both sides. You see here we completely obliterate the tree, going way beyond it. Yet, we only have a pole here of 5 feet. Those trees are 25 to 26 years old.

This picture I not only have here for showing the type of spray that is delivered by this nozzle head, but also the type of equipment to be used on these large machines, 15 horse power machines, or 10 horse power, throwing around 20 gallons per minute. So you can use two of these with 4 nozzles each, in this case with a 300 pound pressure delivering 13½ gallons a minute.

QUESTION: Do you have to stop at each tree?

DR. HOUGH: It is always better to start and stop again just a moment, and then go on. The reason is to give the operator sort of time to survey the situation as he goes on. It is always better to stop and then start again. You move very slowly, stop, and then start.

MR. O'CONNOR: On a small machine with four nozzles it would take the same amount of power, would it not?

DR. HOUGH: Yes. Four nozzles for practical purposes takes about the same amount of engine power and pump capacity as a gun, although the four nozzles deliver a little more liquid than a gun. They are a little faster. For example, when the gun with $\frac{1}{12}$-inch disc was delivering 4⅛ gallons, these nozzles were delivering 4½.

MR. O'CONNOR: A great many people want the underside of the leaves all sprayed. Whether that is essential or not is a question.

DR. HOUGH: As a matter of fact, the purpose of this whole thing was worked out to enable a person to spray the under side of the leaves without going in under the tree and spraying upwards. That is the only other way it can be done. With this type of nozzle you get the leaves on the side, and the leaves are turned and wet on all sides. It actually works out that way. With the gun, you see, you can do it all right down below here; on the ground, understand, it works all right. A careful operator on the ground using a double gun can do what this will do as far as turning the leaves is concerned. It doesn't use the liquid quite as fast, though. But when it comes to getting up at the top of the tree, it is out of range, and you can't get in there unless you open it wide, and then you reduce the quality of spray delivered, you see. And, of course, if you get a solid stream you wet certain parts and skip others. Here you go right ahead, and there is no chance of varying the type of spray delivered at all. It is about as foolproof as any equipment we have and will reach any part of the apple tree, and after all, satisfactory spraying means spraying all parts of the tree alike.

MR. O'CONNOR: What would be the cost of one of those rods for the operators?

DR. HOUGH: Well, we have been making them in Winchester for three years. To make a home-made one (which is rather heavy in a way) costs about 55 or 60 cents, and the nozzles are about a dollar apiece. What this man in the picture is using is ordinary gas pipe. I guess the whole thing wouldn't be over $7.00 or $8.00 at the most, nozzles and all. I understand that one of the spray pump companies is going to manufacture these out of aluminum, which lessens the weight considerably, and of course, that will take away the necessity of having to make your own. It is just like anything else we make ourselves. We may make it and get it right, and we may not.

(Slide). Here is the equipment for the minimum size machine that ought to be in most of our orchards now, viz., the 15 gallon a minute machine with a 6 horse power engine, the four nozzles on top of the tank, and the three nozzles held on the ground, using the same type of nozzles. This particular outfit here is drawing about 11¾ gallons per minute at 300 pounds pressure. For the ten gallon spray machine, 4 horse power engine, just this one hose with four nozzles is the equipment. So the kind of equipment to use depends on the size of machine.

Another thing we might get from this picture is a very common mistake that is made in our part of the country. We find if we can get our operators to spray the trees, the man on the ground spraying the lower half and the man up here the upper half, each man spraying in his own territory, they are more likely to cover the tree. Nevertheless, the temptation is for this man up here to spray down below. He likes to see what he is doing, and he is shooting the spray down. I find it a temptation myself; in all my spraying last year I had to keep reminding myself all the time to spray up above.

(Slide). Here is the same thing exactly, but this man is getting up where he belongs.

MR. MILLER: How many machines would you have?

DR. HOUGH: On these large machines in actual practice, there is a variation in those machines. With the large machine, 20 gallons a minute,—it is being used on 50 to 75 acres. You can actually do it. When you make a statement of the number of machines to the acre, you have always got to take into consideration the various factors. Our sprayer this summer, with 20 gallon a minute pump in our Station, sprayed out, using this equipment, 300 gallons in about 23 to 25 minutes. But it took us a little longer than that to fill up again. Just to make a bare statement, I wouldn't commit myself on any ratio. It depends entirely on the water supply.

PRESIDENT HARRISON: I am pleased to introduce Dr. E. N. Cory, our State Entomologist, who will discuss, "Spray Calendars for Apples and Peaches."

SPRAY CALENDARS FOR APPLES AND PEACHES

DR. E. N. CORY,
State Entomologist, College Park, Md.

In the first place, for the past four years we have been attempting to make our program coincide in almost all of the essentials with the program of the adjacent states, because it is necessary for that to be done in view of the fact that certain of our orchardists have plantings in one, two or more states, and when they get a program from West Virginia that is not exactly the same in regard to the amount of material or the time of application as the one from Maryland, or the one from Virginia, then they begin to question as to why this is so, and which one is correct, which one is the best in certain cases.

So we have gotten together, and we have arranged our program with regard to dilution and time of application so that this trouble will be obviated.

The question of the delayed dormant spray was discussed thoroughly at the meeting at Chambersburg in November. It was the consensus of opinion that lime sulphur is still the best application that can be made, and that no spray material has been developed which takes the place of lime sulphur in the control of aphids. That opinion is based on experimental work in the several states, and is also the opinion in several other states on the Eastern Seaboard. I understand that our recommendations are exactly the same as the recommendations which the Geneva Station will put out, not only on the question of lime sulphur and nicotine sulphate, but also in the matter of oils. They are recommending a 3 per cent. oil only where the red mite is a serious menace.

Where red mites are very prevalent, it was the opinion of everybody assembled at Chambersburg, that oil should be used, and that if oils were used it would probably be best to follow that with lime sulphur and nicotine sulphate. Now, that may not be possible, and you may have to take your chance on the control of aphids. Oils will control aphids, red mite eggs, and scale insects, but the aphids them-

selves cannot be controlled unless you get the oil on in exactly the right time, and it seems from the experience of those that were there, that when oil is put on the tree at the proper time to get the most effective control of aphids, there is a probability that you may get bud injury on your fruit clusters. I have seen good control of aphids with oils and no injury, and a fair control and considerable injury, and the whole range in between.

Apple Sprays for Maryland

In 1928 the codling moth must be controlled without the late applications of arsenical sprays. To accomplish this it seems wise to concentrate spray efforts on codling moth control against the first brood worms and the early worms of the second brood. That is, a thorough job of spraying must be done at the Petal Fall, Three Weeks' and Five Weeks' sprays to control the first brood worms. Special care must be taken to cover foliage at the Five Weeks' spray in order to control also the early worms of the second brood. The Spray Service will attempt to time definitely the Five Weeks' spray by means of codling moth field emergence cages. Hold old picking baskets in screen storage until after July 1st to allow for emergencies and death of all moths.

Oil sprays are advised only where European red mite eggs are abundant. They will control scale insects, however.

The Supplemental Sprays are designed to prevent late disease infections such as bitter rot, sooty blotch, late scab and black rot. No arsenate of lead is advised in these sprays.

There has been additional experimental work on the use of substitutes for nicotine sulphate in New Jersey, quite an extensive series of experiments, but nothing has been found that is as effective as the combination of lime sulphur and nicotine sulphate. The program from there on is essentially the same with the exception that we have increased the nicotine sulphate from ¾ of a pint to 1 pint. Some of you will remember we used more than that in previous years and reduced our recommendation in view of the

contention of certain states that were a party in this combined program. This year those people have come back to the increased amount which we formerly recommended, and we are now asking you to use one pint instead of ¾ of a pint. Really, as a matter of fact, the amount of nicotine is not very much greater, and the ease of measuring it and various other factors enter that make it desirable.

The program from there on goes on, and I will merely say that the petal fall application normally comes around May 10th.

SUPPLEMENTAL SPRAYS

Name of Spray	To Control	Time of Application	Material for 100 Gallons of Spray
1. *Delayed Dormant*	Scales, Aphids, and European red mite.	When green can first be seen in blossom buds.	Lime Sulphur, 32° Baume, 12 gals.,* and Nicotine Sulphate 1 pint. *Note*—Oils must be used to control red mite.
2. *Pre-Blossom (Pink)*	Scab, mildew, leaf-spot, curculio and bud moth.	When the majority of cluster buds have separated, or as determined by spray service.	Lime Surphur 32° Baume, 2½ gals.,* and lead arsenate 3 lbs.
3. *Petal Fall*	Scab, mildew, leaf-spot, codling moth, curculio, leaf roller and other chewing insects.	When most of petals have fallen.	Lime Sulphur 32° Baume, 2½ gals.,* and arsenate of lead 3 lbs.
4.** *Three Weeks*	Scab, leaf-spot, blotch, codling moth, curculio.	About three weeks after petal fall spray, or as determined by spray service	Same as petal fall spray, except that Bordeaux is advised for blotch susceptible varieties.
5. *Five Weeks*	Same as three weeks. Also blotch.	About five weeks after petal fall spray, or as determined by spray service.	Same as petal fall spray except Bordeaux may be advised by spray service in place of lime sulphur.
6. *Seven Weeks Mid-summer spray*	Bitter rot, scab, sooty blotch, black rot.	Usually July 1st to 7th.	Lime Sulphur or Bordeaux Mixture as determined by spray service (No arsenate of lead).
7. Late Summer *Spray*	Same as mid-summer spray.	Usually August 1st to 7th.	Same as mid-summer spray.

*If Lime-Sulphur does not test 32° Baume, then dilute according to dilution table.

**If leaf hoppers are abundant, add one pint Nicotine Sulphate to each 100 gallons of the three weeks or five weeks spray as determined by spray service.

MR. MILLER: We find, and I'd like to ask if you have that trouble, that the scale is coming back. A great many of our growers haven't the machinery to spray their entire orchard in the limited time that they lie dormant, and of course, when the buds swell to a certain stage they are obliged to stop the winter time spraying. Now the scales are creeping back into some of our orchards, and they give us that reason, that every year they can't get done, can't complete the job with delayed dormant spray, and I have a little of that myself. In our orchard we just can't quite get done. We haven't machinery enough to get done in a given length of time. How many days do you generally allow for that? It depends on the weather, doesn't it?

PEACH SPRAY PROGRAM FOR MARYLAND

Time	Materials for 100 gallons of Spray	Purpose
1. *Dormant—before buds swell*	Lime Sulphur (32° Baume) 12 gals. If no scale is present, use only 7 gallons or 4 pounds Copper Sulphate.*	Peach leaf curl. San Jose scale. Terrapin scale.**
2. *Petal fall. (When all the petals have dropped*	Self-boiled Lime Sulphur, or dry mix Sulphur Lime plus 2 lbs. Arsenate of Lead.	Blossom blight. Brown rot. Curculio (overwintering adults.)
3. *Start when shucks are one-half off. At this stage the peach has about one-half its area exposed*	Same as No. 2.	Curculio. Brown rot. Scab.
4. *Three or four weeks after No.* 3	Self-boiled Lime Sulphur; dry mix Sulphur Lime or Sulphur dust (no Arsenate of lead).	Scab. Brown rot.
5. *Six to seven weeks after No.* 3	Same as No. 4.	Brown rot. Scab.
6. *Ten weeks after No.* 3 *Usually July* 20	Same as No. 4.	Brown rot. Scab.

*Two pounds of Lime may be used with the Copper Sulphate as a marker, if desired.

**If terrapin scale is present or red mite eggs prevalent, use an oil spray following the Lime Sulphur spray at the strength recommended by the manufacturer. Apply prior to the swelling of the buds and when temperatures are above 40° F. The combination of an oil spray and Bordeaux Mixture (3-3-50) if applied before the buds begin to swell will control peach leaf curl in addition to red mite eggs, terrapin scale and San Jose scale.

Do you think we'd better take the precaution of doing some winter work to make sure we cover the acreage? We have some trouble with the scale coming back.

DR. CORY: If you have scale in your orchard and you know you can't get over it, it would be wise to go ahead and do winter spraying and take a chance that you won't have very many aphids, and depend upon your pink bud spray, possibly using nicotine if it becomes necessary. But it certainly would be wise to cover your whole acreage with lime sulphur under present conditions. It is true that scale is more prevalent at present than it has been for a number of years.

PRESIDENT HARRISON: Is that increased scale due to the fact that some people eliminated the dormant spray?

DR. CORY: It is true in some orchards, but other orchards have been sprayed regularly and still have the scale incrustation in certain spots.

MR. BURDETTE: What is the objection to fall spraying?

DR. CORY: The chief objection that we have to fall spraying, is that it does not control the aphid problem, and with the delayed dormant addition of nicotine sulphate we do get control of both aphids and scales and still carry considerable material over on the tree for its fungicidal effect.

MR. BURDETTE: I know ours remained in the delayed dormant condition only about four days last spring.

DR. CORY: Well, it differs. Some years you have got quite a long period. Some years you have got a relatively short period.

MR. BURDETTE: Two weeks, usually.

DR. CORY: You can't figure on any definite time. I think normally it would average more around ten days.

The petal fall spray comes along about the first week of May, and then, calculating the balance of those sprays, the three weeks and the five weeks, brings it to about June 15th. Now the seven weeks spray, No. 6 on the program, you will notice in the right hand column says, "No arsenate of Lead." We probably will modify that, depending altogether upon the weather conditions. It is put into the spray program that way in order that the spray program

may be as near safe as possible. The arsenical situation is not improving in any respect so far as I can see, and I think that the Government will probably announce an arsenical tolerance next year which will probably be the same as the British tolerance. That was my understanding of the agreement with the British Ministry of Agriculture two years ago. I think they are going through with that program. So we have left out the arsenic in the seven weeks spray. However, if weather conditions are normal, the chances are that the spray service card will change that. If weather conditions are like they were last year, the chances are we won't have time to get in an arsenical spray which will wash off before harvest. That is, I think, the only likely change in the spray program.

The spray service this year will go out as usual through the help of the county agents, and we will have in the field Mr. Sanders and Dr. Jehle, one watching insect conditions, and the other watching the disease conditions and giving information direct to the county agents so that the cards will go out promptly upon their advice direct from the field.

MR. O'CONNOR: Now, I had a little trouble in trying to get the liquid lime sulphur this winter. How about dry lime sulphur, is that just as efficient on the trees?

DR. CORY: There has been no record, as far as I know, where the dry lime sulphur has been as efficient as the liquid lime sulphur used at the usual rate of application. Sometimes when the amount has been doubled the same results have been gotten.

MR. MILLER: Can you give us the cost to the average orchardman for a 50 gallon barrel of concentrated lime sulphur made at home? We feel it is so cheap it doesn't pay a man to make it.

DR. CORY: Lime costs about a cent a pound. It takes 50 pounds of lime. Sulphur costs about $1.65 to $1.90 a hundred, and it takes a hundred pounds of that. You have water, and it taks the labor of one man for an hour. That is on a single batch basis.

MR. MILLER: It is around $2.00 for a 50 gallon barrel, then?

DR. CORY: That is $1.90 and 50 cents for your lime would be $2.40, and an hour's labor of a man 25 cents. That would be $2.65 for 50 gallons. Of course, you have got the factor of waste, and you have got fuel and apparatus, etc., which must be considered. I should say that a man ought to be able to make concentrated lime sulphur for $3.50 a barrel if he is so situated that he can do it, and it is perfectly proper for him to make it. On the other hand, it may be more economical for him to go out and buy it.

MR. MILLER: I think we can make it for less than that.

MR. MCCAIN: Is there any evidence that the use of oil year after year injures the tree?

DR. CORY: I don't know of any evidence of that sort. I heard the statement made that oils had been used, the lubricating oil emulsions, in the Georgia peach belt for seven years now without any evidence of injury to the tree.

MR. MCCAIN: In regard to dormant spray on peaches, if you have red mite would it be possible—if you had red mite and curl, would it be proper to mix Bordeau mixture with the oil for one application?

DR. CORY: That is a question I will ask Dr. Jehle to answer. He has had experience with that. They have done some coöperative work, and I would like to ask his opinion on that.

DR. JEHLE: We have carried out some experiments with a combination oil with other sprays. The only one which gave good control of both the leaf curl and the other was Bordeau mixture and soap emulsion oil. That gave almost as good control as the lime sulphur.

MR. TOWSON: I see in the program you have four pounds copper sulphate and Bordeaux there in that dormant spray. Wouldn't the addition of lime help to hold the copper sulphate on the trees?

DR. CORY: Mr. Towson wants to know if the addition of lime is desirable to hold the copper sulphate to the tree?

MR. TOWSON: Would it be advisable?

DR. JEHLE: It may be advisable. You can check up on your spraying. Aside from that, I don't think there'd be any difference.

DR. CORY: Gentlemen, we have here Mr. Temple and Dr. Jehle and Mr. Hunter, and now is the time for you to get your information in regard to the control of diseases. So don't hesitate to ask questions.

MR. NOFSINGER: Do you think this lead will control oriental moth?

DR. CORY: No.

MR. NOFSINGER: What shall we do to control that? They are burdensome to us.

DR. CORY: Yes, we realize that, Mr. Nofsinger. We can't tell you how sorry we are that we haven't something to give you that is 100 per cent. control. It is one of the outstanding problems of the country as far west as St. Louis, and I think I am safe in saying that nearly every state is at work on the problem.

MR. ENGLAR: We have an increase of scale in our places. Our difficulty seems to be worse than ever before. It was our purpose to spray this fall with lime sulphur and put on an application in the spring for the same thing, but we didn't get it done. I am wondering what you suggest for the control of this condition in our orchard, and the best thing for us to do. We have found it on our fruit this year more than any other time. We have been using oil spray for red mite for several years instead of using the lime sulphur for dormant sprays. I thought maybe that had something to do with it. I was wondering whether oil would control it as well as lime sulphur. If we had the opportunity during the winter to spray some days with lime sulphur, I was wondering whether it would help us to bring this condition to a better conclusion.

DR. CORY: I think your difficulty is not with the oil, because a 3 per cent. oil emulsion will kill the scale, and that is what you have been using, approximately that. I don't think it makes any difference about which oil you use as far as scale control is concerned. They mostly all seem to give good results. Once in a while we get bad re-

sults, but as a whole, they compare favorably one with the other. The lime sulphur will give you control, all right. I think it is a question of thorough covering, and if it were my orchard with that experience behind me in using oil for several years, and you want to use lime sulphur, as I think you should, I would certainly make every effort to see that every part of the tree is covered, and I don't think you will have any difficulty. You have very windy weather up there in the early spring, and it is going to take a very good job of spraying even on the best days to get a covering, and when you get bad days you probably won't get the covering.

MR. ENGLAR: I was just wondering whether that condition did maintain throughout the state. I was just wondering whether we can blame it on bad spraying altogether, or whether there is some condition like that throughout the state.

MR. ALLEN: If you had an orchard that was badly infested with brown rot this year, what would you recommend?

PROFESSOR TEMPLE: I believe if I had an orchard on the Coastal Plain that had been badly infected with brown rot I would use a good, thorough application of the blossom time spray, that is, the pink bud stage.

MR. ALLEN: In case you did put that on, what else—

PROFESSOR TEMPLE: I'd use both applications. I have had some cases where the brown rot developed. Anybody who has learned to know those things can stand under the trees and see for themselves. Some of our office force can show you these old peaches under the trees that are developing little cups, sometimes half a dozen of them. I have found as many as 97 of them hanging to one peach. Each one gives off hundreds of spores, not in one day only, but scattered over a period of a month or so, depending on the weather, and the more moisture there is, the more these spores are going to develop.

MR. TOWSON: That only comes in the second year, does it not?

PROFESSOR TEMPLE: In an orchard that is bearing for the first time it will not find its way in much until the next

spring, the second year. In other words, the old, decayed peach has to be on the ground through one full growing season and up to the next blooming period before these spores develop. That was, by the way, worked out by Professor Norton at the Maryland Experiment Station.

MR. TOWSON: How much Bordeaux mixture will a peach stand?

PROFESSOR TEMPLE: It depends where the peach orchard is. If it is Mr. Towson's orchard, it might stand a weak strength of Bordeaux without very much injury. Going down to Mr. Harrison's or Mr. Allen's orchards, I would not want to use any Bordeaux on peaches.

PRESIDENT HARRISON: On the Eastern Shore in order to get a crop of peaches, we find it necessary to put on an extra spray in addition to these scheduled for our particular location, probably due to the proximity of the ocean.

MR. LIPPINCOTT: What do you do if you get Japanese beetles this year?

DR. CORY: Well, we hope we won't have any Japanese beetles.

MR. LIPPINCOTT: They are within a few miles—

DR. CORY: The situation is this: while the Japanese beetle was found within five points of the state, we were left out of the quarantine area. The quarantine area was not extended down this way on our promise that we would treat those areas where the beetles were found with carbon bisulphide emulsion. We have completed the treatment at Cambridge.

It got so late we couldn't do more than that. We were just at the point of starting at Ridgely when the first cold snap came. We have the four other areas to treat before June 1st; the period of the flight of beetles being about June 15th. We feel that the method followed is economical, and I hope that you will give it consideration and come to some conclusion as to whether you feel that this procedure has been the correct and economical procedure to follow.

We feel that if the state had been included in the quarantine that the rate of infestation would have been greatly

accelerated, because there would have been a free movment of produce and vehicles into the state. Not only that, but there would be a great disturbance of trade. The material going out of the Baltimore market to points not infested would have had to be moved under certification, and that would involve a tremendous expense to the state, and put on top of that the acceleration of our own infestation, and we feel that we took the most desirable step in keeping the infestation down just as long as possible. It is a rather expensive proposition to treat the soil. It is costing us about, well, the Government estimate was $175.00 an acre for the treatment. We agreed to treat 89 acres. Fortunately, we are treating it at a considerably less amount than the estimate, because of labor conditions and various other things.

DR. AUCHTER: I don't like to interrupt, but the other association has been sending over hurry calls for Dr. Cory for ten or fifteen minutes.

DR. CORY: I would like to stay here and try to answer some of these questions in your minds. I want to say that we will be glad to attempt to answer any particular questions that are put up to us if you will write us. I hoped Mr. Sanders would be here to take my place before I left to jump through the hoop in the next ring, but I haven't seen him come in. However, Professor Temple and Dr. Jehle are here, Professor Temple to give you answers to your pathological questions, and a great many of the entomological questions. They will both be glad to answer questions.

PRESIDENT HARRISON: For the rest of the session this morning we are having a round table discussion, and if any one has any questions to ask, now is the time, anything about any of these diseases or insects.

PRESIDENT HARRISON: Under Eastern Shore conditions where apple orchards are badly infested with scab, which is the better for control, lime sulphur or Bordeaux mixture?

PROFESSOR TEMPLE: Either one will control the disease, but for your sake I would recommend your concentrated lime sulphur in the proper strength until probably late in

the season when you might use Bordeaux mixture as a finishing spray.

PRESIDENT HARRISON: How about bitter rot at the same time?

PROFESSOR TEMPLE: Yes, but you want to be mighty careful about using Bordeaux early in the season, and you should also be careful about using concentrated lime sulphur when the thermometer is above 90. If you use concentrated lime sulphur when the thermometer is above 90 you are going to get considerable injury. You'd better just lay off that day.

MR. BALDERSON: What would you say about dry mix as a summer apple spray in place of either lime sulphur or Bordeaux?

PROFESSOR TEMPLE: I wish I could say I have used it, but I haven't. I know of some that have.

MR. BALDERSON: New Jersey this year recommends it from their Experiment Station.

PROFESSOR TEMPLE: I know it is used in New Jersey extensively, and they have reported very good results, and some of our growers have reported good results.

PRESIDENT HARRISON: In the control of apple scab, doesn't sanitation play a very important factor in getting the leaves covered before pre-pinking state?

PROFESSOR TEMPLE: That is very important. I think anybody who has an orchard under cultivation should plan to cultivate that orchard, the soil should be cultivated, before the pink bud stage so we can cover up those leaves as completely as possible. You must remember that practically all of the scab infection that you get comes from those old leaves that lie on the ground during the winter.

Since Mr. Towson has mentioned peaches, I'd like to advance an idea here that may be of some value to the peach growers. Every year we have trouble in one part of the state or other, in many parts, in fact, on the control of leaf curl. Something happens in the spring to prevent the spraying of the peaches at the proper time. All of us know if we have been doing peach culture work that we must spray the peaches before the buds begin to swell

if we are going to control. If we wait until the buds swell it is too late to get control. It will do some good to spray, to be sure, but we can't expect to get control.

MR. O'CONNOR: I want to say that we have four acres of peaches that were sprayed about a month ago with lime sulphur, with the exception of four trees that I didn't have enough spray left in the tank for, and the next day it rained, and we have been so busy since that we couldn't get in there to finish up the spray.

PROFESSOR TEMPLE: Spray two of those in the spring and let the others go unsprayed. You'd help all this body interested in peaches if you will let two of them go unsprayed and spray two of them next spring.

MR. O'CONNOR: I will do that.

PROFESSOR TEMPLE: It won't cost you very much, and it will give us some valuable information.

MR. TOWSON: You get absolute control by spraying in the fall, there's no question about it.

MEMBER: There isn't any question about spraying for leaf curl in Western Maryland. We have been doing it for five or six years in the fall.

MR. TOWSON: When you have leaf curl and not any scale, why not put on Bordeaux mixture? It is cheaper.

PROFESSOR TEMPLE: There is no question about Bordeaux controlling leaf curl. If anybody is in doubt about it, I'd like to clear up that point right here. If scale is not present, Bordeaux, of course, is the logical spray to use, especially if it is put on in the fall.

PRESIDENT HARRISON: Baltimore City has always been desirous of keeping in close touch with our business, and also socially, with all parts of Maryland. We have a subject which is now timely, which is of great importance to every resident of the State of Maryland, and that is the proposed bridge from Baltimore to the Eastern Shore of Maryland. This will be of great importance to both the Eastern Shore and the Western Shore, because it will make direct connections between the two sections, where at the present time the Chesapeake Bay sort of divides the two districts. We on the Eastern Shore would like to get to Baltimore with

our fruits and produce, and also haul from Baltimore certain supplies back to our district.

There is a proposition to build a bridge across the Chesapeake Bay which will be financed as I understand, by capital outside of the State of Maryland, and I'd like to take this opportunity of introducing Mr. James C. Martien, President of the Chamber of Commerce of Baltimore City.

ADDRESS

BY JAMES C. MARTIEN

President of the Baltimore Association of Commerce

Mr. Chairman, Gentlemen of the Maryland State Horticultural Society:

It is a great pleasure indeed to have an opportunity to meet you men today, and talk for a little while about a subject of very distinct interest to Baltimore and through Maryland. Maryland was very richly endowed when it was created, the hills of Western Maryland rising on down into the tidewater of the Bay and the ocean, but we were further endowed with a magnificent expanse of water representing the Chesapeake Bay, which, however, separates that direct close touch which is normally obtainable throughout the states of our Union.

We have, in these past years, had through the boat lines, a form of communication, but there has developed in more recent years a very extensive system of roads, equal to those built by any state in the Union. With the roads and the automobiles the means of communication has become more intimate, except that this great body of water, the Chesapeake Bay, separates the Eastern and Western Shores. There has been the hope, there has been the dream for many years that we might some day see a bridge thrown across that Bay that would bring into close, direct contact, the two shores of our state.

To erect and construct a bridge of such character requires the investment of very large capital. It has not, apparently, seemed to be the wise move, certainly, the move has not been made on the part of the state or the

city to sponsor a bridge across the Bay. But there has now come to us the proposal of private capitalists to build that bridge that will give such communication between the shores of our state. I can visualize with the automobiles, with the roads, and that bridge that close bond of continuous daily contact that we must hold between the people of our own state to give us the values to which we are justly entitled from the great commonwealth of Maryland. As your products are developed from the Eastern Shore, as the markets are further broadened and expanded, as Baltimore can take its fair share of absorption, of distribution, as you will have opportunity through that bridge and our roads to extend beyond Baltimore, going into Washington, going on perhaps to Pittsburgh if you choose, the products of the Eastern Shore can become more broadly distributed through that bridge with the trucks that you men are already utilizing in the distribution of those products by quick delivery, whether it be to Wilmington, Philadelphia, New York, or Boston.

Just so would it also be possible for our markets of Baltimore, and our business of Baltimore to obtain that closer contact, that closer relationship with you men through our trucks taking the Eastern course over that bridge. The growth of a community, whether it be a city, whether it be a state, can only be that which the people of that city or that state, through their energy and their determination choose to make it, and as the people of our state can be brought into that intimate, close communication, to that degree do we get an impetus to the concerted movement toward the upbuilding of our state possibilities. We need not, with a bridge across the bay, be longer dependent upon the boats or ferries as our means of communication, but jumping into our cars we have the delight of the drive to the bridge and then across over the Bay into the region of our destination. We don't have to wait for the scheduled hour of the boat's departure. We don't have to wait in a long line of cars, wondering if we are going to get on that particular boat or ferry.

With a bridge, we are there. We can go across whenever we want to go, and we have that very immediate contact that is the vital thing in our business. So I can say to you that the business interests of Baltimore, with few exceptions, have been strongly for the bridge across the Bay. The construction of this bridge in accordance with present plans is, from our studies, the means through which this communication can be made, and yet, not impair the navigable value of the Bay or the Susquehanna River. So we are gaining; we are gaining from every angle values that may be obtained, and we are gaining it through the investment of private capital, willing to risk its dollars in an enterprise of such value, with a return to that capital predicated upon the years that will follow with the development of traffic that we all believe that bridge unquestionably will develop.

I don't believe there is any one who has any feeling of doubt as to the value of the bridge. We are agreed that it is a good thing, but the difficutly lies right here; where we have a feeling of belief in a proposition, and it is so good that no one objects to it, it has proven itself that it is a good move, there is apt to be a feeling of overconfidence in the accomplishment of the enterprise. The result is that we do not assert ourselves with the vigor that we might and should to the Federal authorities having the power finally to approve or to veto the bridge, in saying to such Federal power, "We want that bridge. We are going to have that bridge. The people of Maryland demand that they shall have a means of inter-communication that this bridge will afford." Until we do rise and assert ourselves in a positive way, demonstrating our belief and desire for such a bridge, the Federal people are likely to get the idea, "Well, maybe there are some few people interested in this thing. They may have some selfish motive back of it, some ulterior motive that is moving this thing." The questions raised by the boat people are the only questions that have been raised, that you must get this span so much wider, that you must get the elevation so much greater so in times of the storms it will be high

enough, when, as a matter of fact, they don't use that part of the channel in such stormy weather.

So it means that the people of Maryland are determined to get that which is evidently of marked value to us. I am glad you people are in convention so you can say what you feel fit to say, and I believe you will tell the Federal authorities that we want that bridge, and want it quickly. Get right back of it. Press the thing, and press it frequently.

The Association of Commerce has made a study of this movement, has followed it from its inception. We are 100 per cent. back of it, and we are determined to use every means in our power to see it accomplished.

Now, may I just take a moment to say this to you. We are interested further in seeing something accomplished which I believe will be of value to the entire state. I have discussed the matter with Governor Ritchie, and he is very warm on the idea. We are forming in our Association a Committee on State Survey. The purpose of that committee will be to study the natural resources of Maryland. How can this Association of Commerce, the major civic body of Baltimore, the metropolitan city of our state, aid in the development of the natural resources of our state, be they agricultural, be they mining, forestry, fisheries, or what? There is a place within which a body representative, as is the Association of Commerce, can be of value in aiding the natural development of these natural resources and we shall have in coöperation with that movement the Maryland State Agricultural body, the Bureau of Mines, Bureau of Forestry, etc., so that we want you to feel that in Baltimore there exists a body, the Association of Commerce, interested in aiding in the development of our state. We feel that with the good roads that have now been built, and this new means of communication through automobiles, that our interests in the State of Maryland can be further demonstrated through closer contact, our interest in Baltimore can be further demonstrated through the closer contact we will have there, so that if there is a way in which this Association can be of aid to you, don't hesitate to

come and put the question to us. We want to be in close contact with you, and we have a very coöperative spirit.

I do believe without question that the completion of this bridge is going to be such a stimulant to our state, to the development of our natural resources, that I feel the two run hand in hand, so therefore, I wanted to make some little brief comment on this phase of activity.

I certainly appreciate this opportunity of meeting you today, and I thank you for the privilege.

SENATOR HARRISON: Mr. Chairman, being Chairman of Roads and Highways in the last session of the Legislature, it was my pleasure to be one of a committee of three on this bridge proposition, the Senator from Kent County, the Senator from Baltimore County, and myself. I say to you frankly, we spent more time on this one thing than all the other things put together, trying to get together in a sensible, sane way to accept the other fellow's money. One of the good senators from Baltimore City remarked to me one day when we had some conflict about it, "Senator Harrison, the people of Baltimore City, the people of the State of Maryland for years have been longing for a bridge, and here comes capital from New York City to build the bridge and take a chance, and they haven't got enough sense to accept it."

We have nothing to lose, but it is up to us to exert ourselves and show that it is something that to my mind will be worth more to the agricultural interests, mean more for the stabilizing and value of our farms than anything, any one thing we can point to. Believe me, we have been too quiet. Time and time again in Annapolis I'd say something to some of our friends about it. They'd say, "Why, there is no opposition to it. I hear of no opposition." Yes, but we want you to say something about it if you want it. There's where we are. So I have, Mr. Chairman, a resolution prepared here which I'd like to read for the people of this Association to endorse, because to my mind, it is something we should take action on. I have arranged for the Chamber of Commerce to present this to the Federation, and they are thoroughly in accord with it, and I

believe the people of the Eastern Shore and the people of the Western Shore, and the people of Baltimore City should all take action on it. It is the one thing we should all be united upon.

PRESIDENT HARRISON: The resolution is as follows:

"*Resolved,* by the Maryland State Horticultural Society, in convention assembled, that this Society considers the construction of a bridge across the Chesapeake Bay to be of great and lasting benefit to the people of the State.

"*Resolved Further,* that it is the sense of this Society that the imposition of burdensome conditions upon the construction of this bridge which will, or may render the construction impractical, will be detrimental to the trade and commerce of the state.

"*Resolved Further,* that the Secretary of War and Chief Engineers of the United States Army, be and they are respectfully requested to consider in connection with the licensing of this bridge, the importance of the same to the commerce of this State and to the welfare of its people.

"*Resolved Further,* that the Secretary send to the Secretary of War and to the Chief of Engineers a copy of this resolution."

(It was voted on motion made by Senator Harrison, and duly seconded, that the resolution be adopted by a rising vote. Unanimous).

PRESIDENT HARRISON: We will postpone the reports of the committee until tonight. The meeting is now adjourned.

(The meeting adjourned at twelve-thirty o'clock).

WEDNESDAY EVENING

January 4, 1928

The Fifth Session convened at seven-fifty o'clock, President Harrison presiding.

PRESIDENT HARRISON: The meeting will come to order. Mr. Paul Walker, of College Park, will talk on "The Peach Situation in Maryland and the United States."

THE PEACH SITUATION IN MARYLAND AND THE UNITED STATES

BY PAUL WALKER, College Park, Maryland.

The so-called agricultural ills will never be corrected once and forever. But the causes and effects of the agricultural ills can be greatly reduced by looking ahead.

Of course, we are bound to have ups and downs but it would be better for society in general if we were able to make those ups and downs not quite so frequent and steep. In building highways we try to eliminate as many of the grades and bad curves as possible. But in building our agricultural or our peach industry, we are inclined to jump blindly into the dark following our enthusiasm and expectation rather than first studying the situation. So the history of peach growing has been one of sad experiences to some and fortune building to others. When prices are high over a period of years, planting of trees is increased and when prices are low the plantings are decreased. For the good of the industry as a whole, growers should know the volume of peach production that can be expected to bring satisfactory prices from year to year and what steps are necessary to maintain that production. Great losses have occurred because of the lack of knowledge of the plantings made in competing sections and what the situation will likely be when the trees will come into bearing.

For many years in the past, most of the scientific efforts have been directed towards increased yields per unit. Now, there is a possibility that this policy may be carried to such a point that it will actually be detrimental rather than beneficial to the producer. Producing two peaches where only one grew before is of no consequence if the extra peach makes it more difficult to dispose of them at a profit. Perhaps a better slogan would be to produce one better peach than we have been producing. Increasing production per unit amounts to nothing from the growers standpoint, if the final net income is reduced.

From a soil fertility standpoint, it stands to reason that increased production per unit means an increased drain

upon the soil fertility. In fact, in many cases the peach trees may be so close together that the natural soil fertility plus good cultural methods, cannot supply the necessary food for the number of trees, and consequently we find it necessary to come to the rescue with nitrate of soda. As a consequence of throwing nitrate around the trees, we presumably increase our set of fruit, increase our tree growth and general vigor and our yield. There is an old saying that a bird in the hand is worth two in the bush, and in this connection it might be said that a peach produced where it can get the proper air circulation, sunlight and the proper care, is worth two peaches that you can scarcely get at when picking time comes. So that in the face of increased plantings and anticipated overproduction, we can conserve the natural fertility of the soil and not tax it beyond its capacity by reducing the number of trees per acre and there is a probability that we may in addition, decrease the expenditure for commercial fertilizer.

Many economists believe that we must keep the consumer uppermost in mind when production is concerned, (and this fact has never received proper consideration) and that increased production as well as lower margins of profits means lower prices to consumer, hence more consumption of the product. Undoubtedly that is the ideal way to look at it. I am asking you if you feel as though the consumer gets all of the benefit from greater production and lower prices to the producer? Does the cost concerned in handling a bushel of peaches from the time it leaves the farm to the time it reaches the consumer vary with the production? In other words, does the retail price to the consumer follow the trend of the price received by the producer? It is obvious that the intermediate costs, that is, those between the producer and consumer, are fixed costs and have to be paid by the consumer.

So we are gradually beginning to realize that agriculture needs a well balanced ration or a better relationship between supply and demand. We cannot, for instance, expect to increase our yield per tree indefinitely without taking into consideration the fact that we may find the time coming

when it will be necessary to control our number of units at the same time as we are increasing our yield per unit, depending, of course, upon the consumption and demand. As a result of these problems we find it more difficult than ever to separate production and marketing. Marketing begins with production and production ends with marketing. The consideration of these two agricultural problems together will do much to dispose of the steep ups and downs in our agricultural progress.

We are reaching a point in our agricultural production when we can scarcely expect the consumption of a flexible or elastic commodity such as peaches to increase in proportion to the increase in population. Our people have multiplied their wants. Our tastes are more diversified. We are no longer satisfied with a few products of the soil; rather a variety seems to be in the veins of the American people. To cope with this change in our people, agricultural interests have developed many varieties of fruits and vegetables which we may call substitutes in so far as they concern peach growing. These more or less recent fruits and vegetables are offering more and more competition to peaches.

The peach is not a stable commodity, (that is one for which there is a constant demand and consumption as long as the price is reasonable). It is one of the flexible products, the consumption of which varies largely with the price. Peaches may be classed as a semi-luxury. Under those circumstances there are only two ways of obtaining a fair price, (both of which would go hand in hand). The first way would be to increase the quality so that the consumer will come back for more. The other way is to keep production within the point where consumers will demand peaches as a luxury for which they are willing to pay.

While there are consumers who are fond of peaches, it does not follow that they will be like Johnny eating cake. Now, there are all kinds of cakes (just as there are all kinds of peaches) but it is cake just the same. It has that element which satisfies the sweet tooth. So when mother had thought that Johnny had eaten enough cake she said, "Johnny, if you eat any more cake you will burst." "Well," said

Johnny, "please pass the cake and get out of the way." Will consumers eat peaches until they burst?

I have suggested what may happen and what may be necessary to do if peach production is increasing to a danger point. Now, let us consider some facts about the peach industry, to see if there is justification in being alarmed at the situation.

Since 1899 there has been a marked tendency towards a greater average yearly production of peaches in the United States.

In fact, the line of secular trend indicated that in 1899 the average yearly production was about 33,500,000 bushels and that from now on it must be expected to average about 53,000,000 bushels yearly. So that from the year 1899 to 1926, our yield has increased 58% while our population has increased 52% during the same time.

The average yearly production per year from 1899 to 1912 was 38,667,286 and that from 1913 to 1926 was 48,481,857, or an increase of 25.5%, while our population increased 23.5% in that time. So peach production is apparently keeping a little ahead of our increase in population.

The carload shipments have also increased rapidly since 1917, when 27,237 cars of peaches were shipped, to 1926, when 57,744 cars were shipped.

In spite of the large falling off in the number of trees from 1910 to 1920, production has continued to increase. This shows a greater yield per tree during the last fifteen years. Now that we have in the United States increased our planting from 1920 to 1925 by nearly 2,000,000 trees, there is a dangerous possibility that we may face a problem of overproduction in the near future.

In 1925-26 a peach tree survey made by the U. S. Department of Agriculture, Office of Farm Management and Costs (1) showed that in the United States, 54.96% of the peach trees were under the age of 6 years (48% of the total number of peach trees was included in the survey). In seven southern states 67% of the trees were under 6 years of age. In ten states competing with Maryland (including Maryland) 66.26% were under 6 years of age,

(based upon 40% of trees in these states). In Maryland 53.77% were under 6 years of age.

Knowing that heavy plantings have been made in recent years, it is of value to know which varieties are being most planted because the varieties planted will have a direct bearing on the future marketing problem. At this point, I wish to turn your attention to the situation in Maryland and those states offering competition with the same variety in Maryland, namely, North Carolina, Tennessee, Illinois, Virginia, Indiana, Delaware, West Virginia, New Jersey and Pennsylvania.

It is important to note that according to the 1925-26 survey by the U. S. Department of Agriculture, 63.8% of all peach trees in the ten states competing with Maryland were Elberta and J. H. Hales. The per cent. of those two varieties combined varied from 42.3% in New Jersey to 83.7% in Tennessee. In Maryland 49.3% were of these two varieties.

From 1915 to 1925, the Elberta variety has shown no consistent gain in popularity in the ten states, rather rising to a peak in 1920-21 and falling off again. However, the J. H. Hale variety has made tremendous gains in popularity, going from 4.2% in 1915 to 20.1% in 1924-25. Now, when the two varieties of Elberta and J. H. Hale are considered together (and it is proper to do so in marketing as they ripen at practically the same time) we find that they have increased in popularity from 53.1% of the total planting in 1915 to 67.4% in 1924-25. Although both of these varieties are excellent ones so far as production and marketing qualities go, I ask you if it is desirable to continue to increase the percentage planting of these two varieties. As we well know, the best quality varieties do not always command the best prices and in fact our best varieties of peaches in many cases, are the ones we receive a freight bill in return when shipped. So it is reasonable to expect that if we continue to plant greater percentages of these two varieties, we are more and more congesting the marketing of our peach crop rather than helping to spread it out.

The Belle of Georgia has been losing popularity from 11.2% of planting in 1915, to 6.2% in 1924-25. The Carman has also lost in popularity, from 8.3% in 1915, to 2.6% in 1924-25. The Hiley shows no definite trend as it is a more recent variety.

A survey of peach planting in Maryland was made during December, 1927, to determine the number of each variety of peach and apple planted and removed in 1926, 1927 and 1928 (spring). This was done to bring the U. S. D. A. survey of 1925 (2) up-to-date. So far, 120 schedules have been filled out and returned. Of these 120 growers only 43 had planted (or intended to plant) any peaches in 1926, 1927 and spring of 1928. About the same number reported trees removed.

Only 25,078 peach trees were planted by the 43 growers—10,025 in 1926; 5,957 in 1927 and 9,091 to be planted in 1928.

About 30,009 peach trees were removed; 11,334 in 1926 and 18,675 in 1927, as follows:

Elberta	5,509
Belle of Georgia	5,099
Salway	4,563
Ray	2,133
J. H. Hale	1,765
Hiley	1,157
Carman	1,222
Smock	1,100
Bilyieu	1,000

In Maryland, there has been no consistent or definite trend so far as the popularity of Elberta, Belle of Georgia, Hiley or Carman are concerned. The J. H. Hale has increased in popularity from 4% of the planting in 1915 to 19% of the planting in 1926-27 and spring of 1928.

The length of the shipping season of any variety in Maryland is about one month, consequently, we naturally expect competition from a number of states. In fact, there are nine states which actually compete more or less with the same variety. Of course, there are a great many more states which compete from the standpoint of different varieties, that is, one variety competing with another but the nine states referred to above are shipping the same variety as

Maryland at the same time. Those named states competing with Maryland are (generally in order of their time of competition) North Carolina, Tennessee, Illinois, Virginia, Indiana, Delaware, West Virginia, New Jersey and Pennsylvania. The Eastern Shore of Maryland has to compete with North Carolina, Tennessee, Illinois, Virginia, Indiana and Delaware, while the Western Shore finds most of its competition with Delaware, West Virginia, New Jersey and Pennsylvania. It is to be noted that the Eastern Shore competes with Illinois, Indiana, Delaware and Virginia near the height of the shipping season of those states, while to a lesser degree with North Carolina and Tennessee. Therefore, the program of the first four mentioned states will be of material consequence to the Eastern Shore. In the case of Western Maryland we may expect early competition from West Virginia and later competition with New Jersey and Pennsylvania. It might also be mentioned that the extent of their competition may be considerably lengthened by increased facilities and better method for holding peaches longer in storage.

When the total carload shipment is considered, Maryland is insignificant. In fact, the preliminary figure of the U. S. Department of Agriculture for 1926, reports a total of 57,715 cars of peaches for the United States and only 653 cars for Maryland, or 1.13% of the total carlot shipment in the United States. The same year the preliminary estimated production for the United States was 68,425,000 bushels, and for Maryland it was 700,000 bushels or 1.02% of the total production in the United States. One might say that a large part of Maryland peaches is trucked or shipped in less than carlots and that the car load shipments from Maryland do not represent its true share of the total shipment. But the average per cent. of the total production (estimated) shipped in carload lots from 1920-26 inclusive, in Maryland, was 36 and 32% was the average per cent. shipped in car load lots from the United States. In some states the industry is so localized and so far from any market that it is necessary to ship the larger part of the crop by freight in carload lots. In other states the in-

dustry is so near to large markets that a considerable proportion can be shipped in by express, boat, or truck. And in still other states the industry is so uniformly scattered over the state that a large part of the crop is consumed locally and very little surplus is left for more distant markets.

In studying the price of the Elberta variety on specific markets (and most markets show practically the same conditions) we find that the price largely follows the supply, especially the regional supply near a market. This we would naturally expect. It is also noticeable that in 1926 the general price trend during the season is downward in the Eastern markets (with special reference to Baltimore). Consequently, we find the average price of medium to large Elbertas from the South in the early part of the season to be much higher on the Baltimore market than the price is when Maryland peaches go on the market in spite of the fact that the total carload shipment over the U. S. is several times greater when the Southern states are shipping. What is the reason for this fact? Is it a case of dumping or local overproduction? Is it due to the poorer quality of peaches from Maryland or is it a case of consumers paying the added cost of handling from the South? Is it a natural tendency for the demand of peaches to fall off as the season progresses and other fruits and vegetables come on the market in more and more quantities and offer more competition? If there is a possibility that the demand for peaches will fall off (in other words the consumers' appetite for peaches is becoming less and less) as the season progresses then it is of still greater importance that we recognize this questionable tendency and regulate our supply during the latter part of the production to the demand.

It seems to me that psychology is one factor that enters into the condition of the market price, in some years at least. In times of large crops and lower prices growers are inclined to cut down freight charges by shipping to nearer markets and in doing so they create a local overproduction or over supply which may not have any rela-

tionship to the total available supply. But the psychological effect upon the buying public is that the country is overflowing with peaches and down goes price. Furthermore, it is not always the actual amount of peaches shipped to a given market or a number of markets that governs the price, but it is possible that the available supply or total estimated production given out by the U. S. Department of Agriculture will become fixed in the minds of the buyers and influence the price beyond and in spite of the actual amount arriving on the market.

By studying the points in the season when shipments are likely to be lightest, it is possible to determine whether or not growers can afford to place emphasis on the planting of one variety or another according to its season of ripening. It might also demonstrate the advisability of depending upon a better selection of varieties of good quality which will spread over the season enough to eliminate the possibility of taking a low price for the majority of the crop in case of having only one or two varieties.

The differences in cost of production give certain sections advantages over other sections (and without such they might not be able to survive the competition) and an analysis of the figures given out by the U. S. Department of Agriculture (3) shows a wide variation in the cost of production among the various states. The figures given for the states studied are as follows: (from lowest to highest cost):

TABLE 1

State	Cost of producing one acre of peach orchard for first three years (in dollars)
Texas	$ 88.77
Arkansas, Ozark District	111.67
" Highland	120.68
South Carolina, McBee District	128.10
Virginia	130.17
Maryland, Eastern Shore	138.50
Tennessee	139.39
Maryland, Western Shore	140.10
Georgia, Northern District	150.40
Pennsylvania	151.87
West Virginia	153.98
Georgia, Ft. Valley District	157.95
Illinois	167.98
North Carolina	172.51
Michigan	257.24
New York	259.59
South Carolina, Greenville District	260.01
New Jersey	333.54
Utah	414.30
Colorado, Peonia District	562.08
" Palisade District	650.74

Apparently Maryland occupies a favorable position in reference to the amount of investment necessary to bring a peach orchard into bearing.

The cost of producing a bushel of peaches in 1925 appears as follows in range of lowest to highest:

TABLE 2

State	Cost of producing one bushel of F. O. B. local station with interest (in cents)
Texas	$.74
Maryland, Eastern Shore	.86
Utah	.87
Tennessee	.89
Illinois	.90
South Carolina, McBee District	.91
West Virginia	.91
Arkansas, Highland District	.92
" Ozark District	.93
Pennsylvania	.97
Virginia	.98
Michigan	1.00
Maryland, Western Shore	1.01
Georgia, Northern District	1.01
North Carolina	1.07
South Carolina, Greenville District	1.09
Georgia, Ft. Valley District	1.10
New Jersey	1.11
New York	1.13
Colorado, Peonia District	1.16
" Palisade District	1.21

Again it appears that Maryland (especially the Eastern Shore) holds a favorable position when it comes to the cost of producing a bushel of peaches.

Probably a better criterion or measure of the advantage of one state over another in regard to cost can be made when the cost of producing a bushel of peaches is com-

bined with the cost of transporting. These comparative costs appear in Table III. When the eastern markets are considered, it seems as though Maryland can place peaches on the market at the lowest cost of any of the states considered (or at the same cost as New Jersey). However, when Maryland tries to ship to western cities it is evident that many other states can place peaches on the market at a much lower cost. Such differential demonstrates that impracticability of cross shipments from east to central west unless a difference in price justifies it and that in years of general high production the marketing may be restricted largely to markets near production.

TABLE III

Cost of Growing (With Interest) and Shipping One Bushel of Peaches

STATE	*Average to Five Eastern Markets (in cents)	STATE	**Average to Five Mid-Western Markets (in cents)
Maryland (Western)	$1.50	Illinois	$1.35
New Jersey	1.50	Texas	1.47
New York	1.58	Tennessee	1.49
Virginia	1.59	Michigan	1.52
Tennessee	1.65½	Arkansas, Highland	1.55½
Michigan	1.71	Georgia, Northern	1.68
Illinois	1.75	Georgia, Ft. Valley	1.70½
Georgia, Northern	1.76	New York	1.79
North Carolina	1.79	Virginia	1.80½
Georgia, Ft. Valley	1.90	Maryland (Western)	1.82
Utah	1.91	North Carolina	1.88
Texas	1.97	Utah	1.89
Arkansas, Highland	2.08	New Jersey	1.97
Colorado, Palisade	2.25	Colorado, Palisade	2.12

*Baltimore, Philadelphia, New York, Boston and Pittsburg.

**Cincinnati, Detroit, St. Louis, Chicago and Kansas City.

NOTE: The refrigeration charges were calculated from the freight and refrigerator charges per 100 pounds. On fresh peaches as furnished by the Interstate Commerce Commission, 1925 in a report by the U. S. Department of Agriculture. (4.)

In conclusion, I wish to say that Maryland holds an enviable and hopeful position in the marketing of peaches. While she is walled in by states who claim greater proportion of the total peach production, and in some degree is obliged to take a price which is largely controlled by other states, she is not so large a peach state as to be hampered by her own production. In addition, with a comparatively low production and transportation cost, with a long marketing season for one variety, with the possibility of being favored at one or the other end of our season by short crops in competitive states, and with the proper chain of good varieties that will replace those undesirable ones and at the same time eliminate the risk of having the larger part of our crop come at a depression point in the market, we can make peach growing in Maryland profitable as well as fascinating.

1 Monthly Supplement of Crops and Markets, Vol. No. 3, Supplement No. 6, June, 1926, pp. 167.

2 Data obtained, by courtesy of, M. R. Cooper, Division of Farm Management and Costs, U. S. D. A., from unpublished data. Also, Oley, R. C. Varieties of Peaches in Competing States, Their Ages and Trends of Popularity in Percentages. State of New Jersey, Department of Agriculture, Circular No. 110, March 1927.

3 Brodell, A. P., and Washbern, R. S. Appendix of Tables to the Commercial Fresh Peach Industry in the United States. Part II (Cost of Developing Orchards and Cost of Producing Peaches). August 1926—Special report of the U. S. D. A.

4 Park, J. W., and Swinson, C. R. Special Report of U. S. D. A. The Commercial Fresh Peach Industry in the United States. Preliminary report, Part I, June 1, 1826.

Much of the data was obtained from the U. S. D. A. Year Book for 1915 to 1926 inclusive, the Census volume for 1890 to 1900, 1910, 1920 and 1925 and daily market reports on peaches sent out by the Bureau of Markets, U. S. D. A. for 1926.

PRESIDENT HARRISON: Any questions, gentlemen? On these charts I paid considerable attention to the information, data, etc., they contain, and frankly, I feel that Maryland is as good a state as any state in the United States in which to grow peaches at the present time. I think we can

compete with these other fellows, and I have got a lot of faith in the future of the peach industry of Maryland.

Mr. Allen is the Chairman of the Resolutions Committee. I presume he has the resolutions ready, and I would like to hear from him.

Report of the Resolutions Committee

BY MR. LEE ALLEN.

Mr. President, we have only four resolutions this year. Two of them were offered to the Resolutions Committee, and two of them the Resolutions Committee took from last year's resolutions as being worth repeating. The first one concerns the Horticultural Building about which we have had considerable discussion:

RESOLUTION No. 1.

"WHEREAS, the development of the Horticultural industry in Maryland during the past fifteen years has been such as to give it a preeminent place among the agricultural industries of the state, and has caused this state to be considered among the leaders in the production of horticultural crops in the United States, and

"WHEREAS, in the growth of the industry in its various phases, including orchard fruits, small fruits, truck crops, floral and canning crops, nursery management and landscape gardening, there has developed a constantly increasing need for the investigation of many problems, the training of young men for the industry, and increasing demand for extension work in this subject in all the counties of the state, and

"WHEREAS, the President and Board of Regents of the University of Maryland last year requested the Governor and Legislature to provide an adequate Horticultural Building in which provision will be made to carry on work for the benefit of the industry in the state,

"*Be it therefore resolved,* that the members of the Maryland State Horticultural Society assembled at their Thirtieth Annual Meeting, heartily approve of the efforts made last

year to secure funds for the erection of this building, and respectfully urge the President of the University and the Board of Regents to recognize the earnest request of the great body of producers of horticultural crops for this long-delayed recognition of the industry in the state, by placing the Horticultural Building among the very first in their next request to the Governor and Legislature for funds for new construction at the University of Maryland, and

"*Be it further resolved,* that a copy of this resolution be sent to His Excellency, Governor Albert C. Ritchie, the Chairman of the Ways and Means Committee of the House of Delegates, the Chairman of the Finance Committee of the Senate, each state senator and member of the House, the Chairman of the Board of Regents, and the President of the University of Maryland."

(It was moved by Mr. Towson, and duly seconded, that the resolution be adopted. It was unanimously adopted).

MR. ALLEN: The subject matter of this next resolution, or rather the effect of it, was touched on by Mr. Walker in his talk, that is, concerning the publication and broadcasting of estimates of the fruit crop.

RESOLUTION No. 2.

"WHEREAS, we feel that the publication and broadcasting of estimates indicating tremendous crops of apples, peaches and other crops has a depressing effect on the marketing of these crops, and

"WHEREAS, we believe that these estimates are used to a far greater extent in forcing down the prices to the producers than they are to securing moderate priced apples for the consumer, therefore,

Be it resolved, that this Society urges its members to be more conservative when submitting estimates to the various agencies collecting this information, and to make ample allowances for 'culls' of all kinds, including drops, injuries from insects, diseases, stem punctures, bruises, frost, lack of color, bad weather, and insufficient labor and storage losses so that our figures will represent more nearly what we

will actually pack and sell rather than what we hope to have, and

"*Be it further resolved,* that we request the Government and State Bureaus that collect this information to make more ample allowances in their estimates for the factors mentioned above, to the end that the ever-present quantities of unmarketed fruit will not help depress the price of the marketable fruit."

(It was voted on motion duly made and seconded that it be adopted).

MR. ALLEN: The next resolution deals with action that has already been taken regarding the Japanese beetle situation.

RESOLUTION No. 3.

"WHEREAS, the Japanese beetle is approaching into the State of Maryland, and

"WHEREAS, vigorous efforts have been made by our state authorities to suppress the isolated occurrences of the insect,

"*Be it therefore resolved,* that the Maryland State Horticultural Society heartily endorse the action of the Governor and the other state authorities in requesting the Federal Horticultural Board not to include Maryland at this time in the Federal quarantine area, and that we endorse the expenditure of every reasonable amount of money to suppress the insect and prevent its spread over the state."

(It was voted on motion made by Mr. Burdette, and duly seconded, that it be adopted).

MR ALLEN: We have one more which doesn't concern Horticulture any more than any other branch of any other class of people, but we were asked to present it.

RESOLUTION No. 4.

"WHEREAS, the rural people are deeply interested in the development of educational and recreational programs over radio, and

"WHEREAS, the Federal Radio Commission is doing its best to eliminate conflicts and duplications of programs on the air in the same wave length,

"*Therefore, be it resolved,* that the Maryland State Horticultural Society urge the Federal Radio Commission to give careful consideration to the allocation of wave lengths to the needs and desires of rural people, and that special consideration be given to those stations giving educational and recreational programs, market reports, and other useful data from our Land Grant Institutions, and

"*Be it further resolved,* that a copy of this resolution be sent to the Secretary of the Federal Radio Commission and to the President of the University of Maryland."

(It was voted on motion made by Mr. Long, and duly seconded, that the resolution be adopted).

PRESIDENT HARRISON: Down on the Eastern Shore we have a naw organization called the Del-Mar-Va Eastern Shore Association. Some people do not quite understand what this word "Del-Mar-Va" is. Some think it is a new state, making 49 states in the Union, but it is not. It is 14 counties that belong to the Del-Mar-Va Eastern Shore Association. We have borrowed from the Western Shore, and have adopted one of your sons, and we will now hear from Dr. F. B. Bomberger, Director, Bureau of Markets, Del-Mar-Va Peninsula, Salisbury, Maryland, on the subject "Factors Influencing the Profitable Marketing of Fruits and Vegetables in Maryland." Dr. Bomberger.

FACTORS INFLUENCING THE PROFITABLE MARKETING OF FRUITS AND VEGETABLES IN MARYLAND

DR. F. B. BOMBERGER, Director,
Bureau of Markets, Del-Mar-Va Peninsula, Salisbury, Maryland.

Dr. Auchter will bear me out when I say that when he announced to me that I was scheduled for this address, I told him that it was practically impossible for me to accept, owing to a number of very pressing official engagements that happened to be crowded in here in the last two weeks of December and the first two weeks of January.

However, appreciating the compliment of being put on the program, and realizing that Dr. Auchter was more or less committed, I am here without very much preparation. The subject is so important that I may be able to offer you a few suggestions which I have scrambled together for your consideration.

I was interested in what Mr. Walker was saying about the matter of competition against which Maryland fruit and vegetable growers are working—he was speaking, of course, to the peach growers. As a matter of fact, it doesn't make much difference what line of production, particularly in the line of fruits and vegetables, one has under consideration. You will find that that old happy day when Maryland, during certain periods of every season, had practically a competition-free market somewhere, has passed away.

However much of that situation may have existed, if it ever really did, I believe we all must resolutely face the fact that that condition is not here now, and it will not be here again. Practically all of the charts shown by Mr. Walker, I think, have already convinced you of that fact.

As you know, the business of marketing farm products has, within a very relatively short period of time, undergone a tremendous transformation. I could devote considerable time to that, but perhaps I'd better merely illustrate it in this way: By reason of the fact of the congestion of so many of our people in the large cities, the sources of supply, especially for food products for those congested centers, have been removed farther and farther away with each returning year, until, according to figures issued by the Port Authority of New York, the average distance which food products have to be transported before reaching the market of New York, is more than 1,500 miles. When we stop to consider the unhappy situation of being 1,500 miles away from breakfast every morning, you can readily see that it is something to think about; and yet, that is literally the case. If anything were to happen to our transportation system in this country, our immense cities would have to depopulate themselves or starve to death, and in very

short order; because no one of them is very far ahead of the visible supply of food available for consumption.

It will give you some idea, I think, of just how this thing works out if I call your attention to a few figures here from a report issued by the United States Bureau of Agricultural Economics. It gives the figures of shipments of certain food products from the Western Coast, and I figured out some percentages. I find that 42 per cent. of our apple production comes from the Pacific Coast, Western Oregon and Washington, 60 per cent. of the asparagus, 80 per cent. of the cauliflower, only 10 per cent. of the celery, (although that is growing quite extensively and you can expect that percentage to increase very rapidly), 30 per cent. of the green peas, 99 per cent. of the lemons, and about 70 per cent. of the oranges, 75 per cent. of the lettuce, 50 per cent. of the mixed vegetables, 50 per cent. of the spinach, 30 per cent. of pears, and other figures not quite so noticeable. That gives you a picture of the tremendous percentages of those products that are coming from the extreme Pacific Coast.

In recent years we have been very much impressed by the sudden development (at least, it has come to our attention very suddenly) of some of these production regions a little nearer home. Mr. Walker told you about the peach development in Illinois. All during the season down on the Eastern Shore people have been wondering why prices for sweet potatoes have been low. True, there has been an increase in the total production, but I don't believe that total production alone should indicate anything like the low level of prices that sweet potatoes have commanded in the market this year, because, as a matter of fact, the Del-Mar-Va produces pretty nearly 50 per cent. of all the car lot sweet potatoes in the United States.

We suddenly find, when we come to look at the situation, however, that in Tennessee they are developing a tremendous production of sweet potatoes. They have standardized their variety. It is one of these semi-soft yam types which in the Middle West, Detroit, Chicago, and those industrial cities out there, are very popular. The migration of tens

of thousands of negroes from the South into the industrial plants of these Middle Western and Northern cities, is accounting for a taste for Southern sweet potatoes which is taking our market away from us out there in those sections. And so we might go on.

Cantaloupes are now coming from California, Arizona, Colorado, the Ozark region. You find through all these markets grapes from California. Mr. Lee Allen, at one of the meetings of this Horticultural Society, pointed out that there is a direct competition in the public demand when you have grapes and peaches side by side; so when we find nearly a hundred thousand carloads of California grapes being sent in during that period when our fruits and vegetables are offered on the market, we have a competition that is just impossible for us to meet under our present system of management.

We get peaches from the Carolinas and in 1926 we had Georgia peaches in here right on top of Maryland peaches. Normally they would not be, but occasionally we have one of those absurd perturbances of nature, and the first thing you know, we have Georgia peaches on top of ours. So our white peach crop was of practically no value that year, because they were selling in competition with yellow peaches from down South.

Apples from the Pacific Coast, watermelons from Georgia, white potatoes from the Carolina-Norfolk section, and recently the Kaw Valley, Kansas, another of those interventions of the Middle West to produce what the Eastern producer is producing at just about the Eastern Shore's time.

Sweet potatoes, I have already referred to; also asparagus, lettuce, cauliflower, spinach, green peas, onions, etc. That produce comes from all that irrigated region out there in California, and is now coming from Arizona, Texas, New Mexico and Old Mexico. Where they put water on that desert it is ideally adapted for growing all sorts of perishable fruits and vegetables, and the commercial portion of it is all grown for the Eastern market. That is the situation that is confronting us, gentlemen. The old period when we could produce practically anything and find a mar-

ket for it,—find the Eastern market free of competition,—is gone forever.

Mr. Walker pointed out that we had certain advantages, and as a matter of fact, when we consider the handicap under which a great deal of this production is attained, it would seem almost impossible that those people could take our markets; and yet, before I pass on, I'd like to call your attention to this: their land is high priced, anywhere from two to ten times the value of land here. The wage level is very much higher.

On top of that they have the cost of irrigation, because in the Southwest and along the Pacific Coast, most of our intensest competition is coming from irrigated land. When you realize that every gallon of water, without which the crops will not grow, that goes on those crops must be paid for, you see they have a cost which we here certainly do not have. Of course, sometimes we want rain and can't get it; and sometimes we get too much when we don't want it; but it comes from the heavens free of cost, and it doesn't add anything directly to the charge of producing crops.

Mr. Walker referred to the cost of transportation. I have averaged it up roughly. I am not quite sure I have the figures right, but I think against, not to exceed $150.00 carrying charges on fruit and vegetables from, say the Del-Mar-Va, (and I suspect it would not be much different in other places in Maryland) there is an average cost of about $650.00 from California per car. When you realize that those people are producing out there under handicaps, high-priced land, high wages, cost of irrigation, and this tremendous transportation cost, it looks as if we ought to be sitting pretty, right on top of the market; that there ought not to be any difficulty at all in our going into any of our markets and taking a preference over this competition from the West. And yet, you know we don't find it that way. You can go right out in Baltimore today, notwithstanding the fact that good fruit is produced in Maryland, in Delaware, and in Virginia, which will bring as high prices here in this city as any other fruit produced anywhere else, quality for quality—I believe that is true, because I have

seen it on the markets time and time again—notwithstanding that fact you can go right down here today and find Western apples on an average selling way above the average for the Maryland product.

I don't think we ought to focus our attention too much upon averages. I am trying to say here that I believe that in this market, whether it is lettuce, onions, or sweet potatoes or white potatoes, or apples, or peaches, or any other commodity, we can get as good prices here in Baltimore, quality for quality, for stuff grown in Maryland or grown anywhere near around here as you can for that which is grown farther away. If it doesn't show up on the average, then it seems to me there is something wrong in the average quality of the product.

There is another handicap those people have out there, and that is that in every line of production they are suffering from tremendous over-production. I was out there last May. I traveled the whole length of that coast, and I didn't talk to any one who is concerned in any branch of the industry, whether producing lettuce or cantaloupes, lima beans, citrus fruit, grapes, prunes, or raisins, or whatever it was, who didn't say, when I asked, "What is your prinicpal trouble?" "Over-production, over-production in every line." When you take the figures that show the enormous increases of the last ten years, the wonder is that they are able to stay in business. The wonder is that they are able to market even a fraction of the stuff that is produced. That is a tremendous handicap. You know what it is. I think you remember in 1926 you had some surplus of apples, a little difficulty in getting them off your hands. And yet, those people are confronted with a surplus nearly every year in practically every crop. Those are the handicaps under which they labor. That ought to mean something to us here in the East.

How do they overcome these handicaps? I can touch on five points. I am merely going to mention them, I hope to give you an illustration of each one, and then I want to get one or two particular points which I'd like to discuss in more detail tonight.

In the first place, they are working eternally to lower production costs. That is a topic for a lecture in itself. If we had the time we could consider some of the efforts that are being made, some of the campaigns that are being conducted always to drive down production cost. They are 3,000 miles away from the market. They *have* to lower production cost. I am going to let it go at that.

The next effort which is only less strenuous by a little, if at all, is their effort to raise the quality of their product I recall I talked to the manager of the Hood River Apple Growers' Association, and I asked him, "What is the particular problem before your marketing Association?" I naturally assumed he'd be telling me something about getting prices for fruits, or finding markets. This was early in May last year, too, and they hadn't disposed of all of their apples yet from the year before. Much to my astonishment he said, "Dr. Bomberger, the problem that we have out here that over-shadows all others is to get our membership to make every apple that is produced a fancy apple or better." In other words, their whole production campaign is aimed at quality.

The next point is, that whatever they produce they subject it to the most rigid standardization. You know that. I needn't say another word about it. Whether it is apples, or cantaloupes, or lettuce, or nuts, or grapes—whatever it is, when it is ready for the market, it bears on it a standard, a stamp, a sign that indicates that it has been rigidly standardized. That applies to the containers as well as to the quality of the product on the inside.

The fourth point is that they utilize their by-products. Mr. Walker referred to the fact, (I think it was in the Ozark region) where they have the peach crop in highly concentrated areas. Of course, that is true in practically all of these competing regions, those that hurt us most. They couldn't hurt us so much if they had their production scattered out over a wide area, because they would lack this same ability to bring together their products into central packing houses, and to have this rigid standardization, and to have the by-product plants there to make use of these

culled fruits, practically every bit of them. In the citrus industry they take the rind and make citric acid and a whole lot of other things that the chemist has found out can be made at a profit from the cast-off waste material.

Of course, that helps in several ways; because it helps to reduce the cost of production when you get something out of the cull, and it is so much easier to cull something if you are not throwing it away. That's what hurts the average man here in Maryland where he is going on an independent basis. If he culls his apples and peaches, and all he takes out is practically going to be a waste, I tell you, it hurts. Just to the extent, however, that through coöperation or through concentration of the business in a restricted area you can enable some plant or firm, whether it is commercial or whether it is coöperative, to make use of those by-products, right then and there it facilitates the standardization without which these people on the Pacific Coast would be absolutely lost.

The last point is the control of distribution which I shall discuss later. The result of all these things is that they come here with every one of their products and take the fancy prices. If there is any fancy price in the market at all for apples, peaches or citrus fruits, or cantaloupes, or whatever it is, you can almost invariably find that these products from these remote areas are taking the fancy prices. Every time a carload of Washington or Oregon apples is sold at the top price, it means that there is just one less top price offered for a Maryland carload, or for a Virginia carload, or one from one of these other areas. Every time there is a carload of fruit and vegetables of any sort that comes in here from these western regions and is consumed, it is that much cut off from the practical demand for production in this state.

It just occurred to me when I was speaking about things that come in here and compete with our fruits and vegetables, that we mustn't overlook the enormous development, or increase in development of what we might call processed fruits and vegetables such as prunes, raisins, and that sort of stuff which may not appear at first glance to be really

competitive. Yet, you know if one takes prunes for his fruit for breakfast, he probably won't take cantaloupe, or baked apple, or peaches and cream or something like that. They are competitive; and because they have them standardized, and because they advertise them and crowd them in before the housewife every day, advertising in magazines, making them appear attractive, luscious, and delicious, naturally, the demand has increased to the elimination of some of the practical demand for our own products.

It seems to me that presents a problem to the growers of fruits and vegetables in Maryland, and that this competition can be met only by going in exactly the same footsteps. It has been pointed out here, for instance, that if the cost of production of Maryland peaches on the Eastern Shore is $1.37, and the cost of production for Illinois peaches is $1.68, that differential gives you an advantage, or offsets some other advantage that some competing area has. The more you can lower your cost, the more you increase your differential. That isn't open to argument. It is obvious. I will not discuss it further.

I do believe that by producing quality products, we have a very definitely practical proposition here in the State of Maryland. If I were to be asked, "What is the essential difference in the ideals as translated into practice (because when we talk about ideals by themselves we get into thin air) in this region here as compared with that in the far West?" I would say that there the major emphasis is on quality production; here it is on quality production.

Understand, I didn't come before this body with the idea of having you throw things at me for saying unpleasant truths. That isn't my purpose at all. I believe any one is justified in stating what appears to be the fact. I believe that the figures Mr. Walker quoted here with regard to the average prices for Maryland peaches on the Baltimore market reflects to a considerable extent the fact that a tremendous quantity of common peaches get into the Baltimore market. I wouldn't say that all of the good peaches go somewhere else, I know that is not true. But I do believe that an entirely disproportionate share of poor peaches,

and poor products of almost every other description, come into Baltimore because in certain regions of our state they have the advantage of low water rates, and that gives them easy cost of transportation. For some reason or other in these large cities, stuff of that sort always finds sale at a price, and as long as those nearby will continue to send stuff in because it will sell at a price, regardless of how low it is, we are going to have a situation somewhat like that described in the chart, here.

I believe that when we come to take a re-assessment of the peach industry on the Eastern Shore of Maryland, for instance, before very long we are going to wake up to the fact that we might as well eliminate our white peaches. It is very obvious that if the development of the North Carolina area is going to bring yellow peaches into the market at the same time, practically, that the white peaches from the Shore are coming, there is little hope of our successful competition. That is only my own notion about it, but I think it does bear out the importance of a careful study of the actual figures over a period of years, in order that we won't have just one abnormal year to judge from to determine exactly what varieties are needed in order to meet this competition. The thing I find out on the Pacific Coast is that in most of these industries they have gotten the variety business down to a very, very fine point. They limit the number of varieties just as closely as possible.

I would venture to question just one recommendation made by Mr. Walker. He probably knows more about it than I do, but I am going to throw out the question for your consideration. I believe when you come to study the thing, you will not increase the varieties of the peaches you are going to grow to spread them out over a longer period. I don't believe the market situation is going to justify that. I believe it will rather come down to the point of your selecting a more limited number than you have been growing in trying to find the type on which the competition from these other areas is less keen for that particular period. I am merely offering that by way of suggestion, because we have reached that same conclusion in the study of cantaloupes

and of strawberries on the Eastern Shore; and I believe it will prove to be true with peaches.

I believe that production of fruit, particularly on the Eastern Shore of Maryland and Delaware, has got to be made with more attention to producing color. I believe any practical fruit man will tell you that the thing that makes fruit sell at best prices is color. I think that is true, and yet, the thing that seems hardest to get here in Maryland is adequate color. May I be permitted to say it seems to me that the grower is driving at getting by with just as little color as the grade requirement will permit. That is just exactly the reverse of the attitude toward this problem we find on the Pacific Coast and in the Northwest.

Don't for one minute, think I am unaware of the fact that conditions out there are vastly different,—that it is easier to get color out there than it is here. I am well aware of that. But I brought along for the purpose of reading to you one paragraph tonight, a statement that was published some time ago in "Fruits and Gardens," by Mr. William Michael, of Wenachee, Washington. You all probably know of him. Here is what he says: "Formerly we talked about trees and bulk production. *Today we talk about sunlight in our orchards and quality fruit. The added sunlight on half the number of trees is giving us a heavier production of first-grade apples,* and there is only one answer to the question of too many trees per acre, and that is, use the axe." He is referring now to the West. *"This is true with us, where we have perpetual sunlight. It is likely more applicable to you, where there is less sunshine."*

It seems to me there is no getting away from an argument like that. If it is easy for them to grow color, and yet, they make it the principal business in their productive program, how much more should it be your business here in a region where color is harder to grow. I offer that to the practical horticulturist for solution. I, personally, am not a horticulturist. I am just a plain market man, knowing that it is color that the market will pay money for, and that you can get more for one well-colored apple than you can get for two half-colored apples in nine cases out of ten.

MR. HANSON: Tell us how to get color, Doctor.

DR. BOMBERGER: I leave that to the Horticultural Department. I will say this, and I will probably be criticized for it, I don't believe there is enough pruning, I mean of the kind that takes out branches to let the sunlight in, and I positively know that there isn't one-third as much thinning of fruit as ought to be done. I have here right before me this article, "Growing Quality Apples with Sunlight," which lays a tremendous lot on this question of thinning. Here is another, "Does Fruit Thinning Create Profits?" by E. C. Auchter, and W. E. Whitehouse, University of Maryland. If you will read that in "Fruits and Gardens," for June 1927, you will find an endorsement which absolutely demonstrates that it does pay. In the same issue is a summary of investigations made, I think in pretty nearly every important fruit state in the Union, where they give additional evidence along that line. I admit, gentlemen, that is a technical proposition and I should not get into it. I merely call your attention to it. I believe, certainly, that not enough attention is being paid to getting the sunlight into the fruit trees, to getting fewer apples on there of quality, to getting more apples on there of high color which gives you your fancy and extra fancy fruit which it pays to market even in the dullest season that you can possibly have. Either that is right, or else these people in the West are absolutely all wrong; and I don't believe we are prepared to suggest that that is the case.

The next point is careful handling. I have here a note that I clipped from one of the papers, "Why Culls are Culls." This was from one of the Michigan fruit selling organizations, and based on the harvests of 1922-23-24-25, on about 7 or 8 varieties they grow there, they found out that low-grade apples were culled out for the following reasons: Lack of size, 34.2 per cent. (Lack of thinning, you see, has a lot to do with lack of size). Limb rub, 27.9 per cent., bruises, 15 per cent. These were the first three causes, and if you will take those three causes, your percentages add up to make 77 per cent. of culls all of which come from lack

of size, limb rubs, and bruises. I don't know whether that means anything to the practical horticulturist or not; but I do know that just to the extent that we have our production program based on allowing 75 per cent. of the culls to be thrown out for what might be called mechanical reasons, there is something wrong with our program if we are really out to grow quality fruit. If it is more economical in the long run to grow a mass of second-rate fruit (compared, I mean, with the fancy stuff that comes in and takes top-notch prices) I'd be the last person in the world to say grow fancy fruit. I believe the more you study this proposition,—this tremendous competition coming in here in every line,—it is bound to be borne in on you that money, time, and effort expended in producing quality is going to bring you bigger returns, nine cases out of ten, than merely effort that is going to produce you quantity. I believe that absolutely to be true.

Now, when we come to rigid standardization, I don't want to take your time to discuss the value of that. We see so many cases of it. I will mention two. In 1927 Delaware passed an apple grading law, the principal feature of which was that every bit of the fruit offered in closed packages in that state must be labeled correctly under penalty. (Incidentally, this legislation was secured through the efforts and backing largely of the growers. I don't think any legislation, unless it is backed by the sentiment of the growers, is worth the paper it is written on). The result is that from all over this country came letters from commission men in markets from Chicago to Boston, in which they say that never before has an apple crop from Delaware come into the market in such good shape, in such good condition, so well graded, and bringing such immediate acceptances as it has this particular year, and that aside from the fact that this is a year in which you could sell almost anything. In a year like this when the market wants about anything you could get, here we have testimonials to the fact that Delaware, which had a notoriously bad name for the condition in which the crop has been packed, and particularly marked, has profited by improving its pack of apples.

Standardization does pay, because already Delaware fruit has gotten a better name than it has had for a number of years. I have testimonials in my desk from the chief of the Division of Markets in Virginia, that the Virginia apple marketing law has worked out in the same way, although perhaps not to the same degree, because it is a larger state, and I suppose the enforcement of the state laws is a little bit more difficult.

Mr. Burroughs, who is associated with me in the Marketing Bureau of the Del-Mar-Va Association, has made some studies with regard to the cantaloupe marketing on the Eastern Shore this year. The figures have developed some really astonishing evidence here of the value of standardization. I wish I had time to tell you about it in detail, but in effect we find this: there are about 10 or 12 of the associations of farmers that for several years now, (4 or 5 in some instances), have been bringing their cantaloupes into central packing plants, having them graded and packed under impartial control. Sometimes it is done commercially, sometimes in coöperative associations. It doesn't seem to make much difference about that; the stuff comes in and is graded and packed. At the end of the season, we computed the average prices on the open market auction blocks not only in Salisbury, but up in Delaware as well, and we averaged up the daily prices.

Then we took the average prices received by these 10 or 12 farmers' associations. Not one single day during the past season did the average price received, by the farmers' associations in which the cantaloupes were graded and packed under proper supervision, fall down as low as the price on the open block. That is to say, taking the period during which they were both operating. There is a catch in that. For four or five days, or probably a week at the very beginning of the season when cantaloupes weren't fit to ship they did pass through the block, and of course, there were some very high prices paid for those, but the farmers' associations were not packing at that time, because they pack only mature melons.

I have had letters from practically all of the principal commission firms through which these farmers' houses sold their melons and the testimony is uniformly to the effect that the melons arrived from these houses in better shape. In the first place they were better graded, they were more mature as a rule, and also, they invariably brought somewhat more on the market, which is sure evidence that standardization pays. I believe that one of the things that must be part of the growing program in this state.

MR. WALKER: Would it show that a man received as much per acre for that crop he standardized as the other fellow?

DR. BOMBERGER: I believe it would, if not the first year, in a very few years; and I will tell you why. Just as soon as you get a group operating together, they immediately begin to study their mutual interests, and they begin to consider varieties, they consider fertilization, the matter of spraying their plants, etc. They do that more naturally when they have a group of them all interested in getting a good crop, a good product, than they will if left to themselves. It usually follows that these farmers' groups are producing one variety, and these other things are coming into consideration. Naturally they are going to improve their production. They are going to improve the extent of the production as well as the quality of it.

MR. WALKER: Will it make them grow a better quality?

DR. BOMBERGER: Yes, you can see it in any of the packing houses. That applies in Delaware, in Dorchester, in Wicomico and also Caroline County, where they have one of these houses. I believe if there is ever going to be a regeneration of the method of production of cantaloupe growing on the Eastern Shore, that is going to have a great deal to do with it.

I realize my time is getting on, and I want to get to a point that I think is worthy of consideration, and that is the controlling of distribution. I have already said I think we should follow in the footsteps of our Western competitors by lowering production cost wherever it can be done; by producing quality products wherever it is possible to

do so; by most rigid kind of standardization after you get the stuff; and utilization of culled products as an aid to standardization, and also to cut down the cost of production.

But I beleive that when we come right down to the last analysis, until we get some method of getting a little bit more control over the distribution of our product than we have with regard to most of the things we produce, we are never going to get anything like the full benefit of our efforts in growing these products.

I want to give you an illustration which I think you people in Western Maryland will be interested in particularly. You are not unaware of the fact that in 1920 or 1921, or somewhere in there, we made strenuous efforts to get the growers in Western Maryland into a central selling organization. We tried for two or three years, to get the idea developed. Here was the great Cumberland-Shenandoah-Potomac Valley, all with conditions more or less alike, with a period where the markets were practically the same, and the problem was, what could we do in order to improve the selling of our fruit? Recently I have been very intimately associated with an effort made to improve the marketing of the potato crop down on the Eastern Shore of Virigina. I want to tell you a little bit about it, because I believe that in this plan there is the germ of an idea which can certainly be applied to that marketing situation up there in that whole region. I believe it can be applied to any other crop such as cantaloupes, or strawberries, or any of our other vegetable crops where they are grown in regions that are fairly restricted like Patapsco Neck, for instance.

About 25 years ago, down on the Eastern Shore of Virginia, they organized the Eastern Shore Virginia Produce Exchange, a purely coöperative organization, which at various times, and at the present time, markets perhaps 65 per cent. of the potatoes produced down there. The idea was that everybody would belong to the Exchange; and of course, that didn't work, because it never has. We don't take our religion that way, we don't take our politics that way, and we won't take our economics that way. Nobody

ever will have an organization that everybody will belong to.

After four or five years another exchange grew up, and as years went on, 1, 2, 3, 4, 5, a dozen independent agencies, dealers, have come in to sell that crop; and any time when the crop has been normal or above normal, here's what happens. Potatoes start rolling in from one county, next from another county above, and just about the time they are going pretty well, in comes Worcester and Somerset Counties of Maryland. Then, instead of having five or six hundred carloads to offer to the market every day, they will ship a thousand or 1,300 cars. The market gets indigestion. The stuff doesn't roll.

Here's what happens: this dealer says, "Well, if potatoes won't roll at $5.00 a barrel, then I'll quote at $4.75." So he begins rolling potatoes at $4.75; but the manager of the next exchange says, "Here, I've got a lot of potatoes to sell. If they won't roll for me at $4.75, I'll roll at $4.50." Some other independent dealer has some potatoes to sell—and understand, they are all interested in the commission on the business, with a minimum per package always. So they have cut a dollar off the price of potatoes in two hours down there some days; and they are the farmers' potatoes. That's the signficant fact.

PRESIDENT HARRISON: They receive the same brokerage per barrel, don't they?

DR. BOMBERGER: Yes, the same minimum, now it would be foolish for anybody to sit here criticizing because the more active the manager is, the more business he does. His clients' potatoes must be made to move. You can't find fault with him, and you can't find fault with the independent dealer. He has his overhead, his employees, he must get business, must sell potatoes, and he must sell them at whatever price he can move them at. Just let's see. If in one day the average shipment is 800 cars with 200 barrels to the car, that is 160,000 barrels of potatoes. If they knock the price 25 cents a barrel on that one day's shipment, there is $40,000 loss. A dollar a barrel represents $160,000 taken away from the farmers in one day.

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That isn't peculiar to the potato game; it is the same thing in the apple game, wherever we have a number of buyers or a number of exchanges. And you can't find fault with anybody. The question is, are growers forever and ever going to live under that system, which is of no particular benefit to the buyer, because the buyer is in a speculative market, and usually over a period of years he must do pretty good, or the bank will be holding a lot of paper which he can't redeem. In 1926, at the end of the season down there, the number of dealers on the verge of bankruptcy caused the banks to say, "This has got to stop. We will not finance another crop either for the production or marketing of it unless some change in the system of marketing is made."

The plan that was finally worked out was this: Every grower was asked to sign an agreement that he would market his crop only through agencies that would agree to certain conditions; in other words, join the Eastern Shore Farmers organization, and sign a specific agreement that he would market his crop only through the so-called affiliated agencies.

Then they went to the dealers, and said, "If you want to get the business of our members, then you must agree to sell under certain conditions, and the primary condition is this—that you will not quote potatoes on any day at any price lower than that named by a quotation committee which will be named by a board of managers of our association,"—a very simple proposition designed to restrain by price cutting and maintain a price level.

The outcome of that has been this season, notwithstanding the fact that they never had more than 50 per cent. of the farmers signed up, and two or three agencies which could not be induced to come in, one of them a very large agency,—one which bought as many as 100 carloads a day for cash at lowest figures and quoted them day by day at 25 cents under the price named by the quotation committee,—notwithstanding the fact that they marketed 22,000 cars of potatoes against 14,000 last year, an increase of more than 50 per cent.,—notwithstanding all those facts, this or-

ganization marketed the biggest crop of white potatoes that was ever harvested on the Peninsula in the history of the whole potato industry at an average price, taking day by day prices and averaging them up for the whole season, of just 15 cents less in 1927 than for the normal crop of 1926.

If you know anything about the potato game down there, as I suppose most of you do not, you will know that whenever we have had a crop like that, just about the first week in July the bottom went right smack out of the whole market, and potatoes would be sold at anywhere from $1.25 down to 65 cents a barrel, not enough really, to pay the cost of the barrel. This year the lowest quotation was $2.25, and the average was around about $3.52 for the whole season. I believe it is a most remarkable accomplishment, for a farmers' organization. Now, of course, the farmers are going out to get as near 100 per cent. as possible this year, They have said that unless they get 85 per cent. by January 17th, they will not operate; because they don't propose to help the outside farmers get the benefit of what they call "holding the umbrella to keep the rain off them." They have set a minimum of 85 per cent., and I think they are going to get it.

You apple growers will be interested in this. When I was in California last year in Sonoma County, I found out the apple growers in that county were working on exactly the same kind of organization to handle their apple deal out there. They have only two counties producing Gravenstein apples. They come in here early in the season in direct competition with Yellow Transparents, Wiliams Early Red, etc., and they bring tremendous competition on the early market. They have developed three coöperatives out there, and they have 10 other dealers. In 1926 they were nearly all on the verge of bankruptcy, dealers and growers, and they arrived at a plan which is essentially similar to this. I have here the report of the President of that association for this past year, in which he says that not one day during this year did the price of Gravenstein apples in the market drop as low as the

prices named by their quotation committee. I commend that especially to you gentlemen who are in the northwestern part of the state, to find out whether that doesn't meet all the conditions in that situation. Any man can market his produce through any dealer he wishes. The essential thing is that that dealer shall be under agreement and held by a bond,—$2,500 out there—not to cut prices. If a dealer violated his contract once, he was fined $1,000, if he violated it twice he was fined $2,000, and if he violated it three times he would be fired.

I think none of them violated it at all. They had 96 per cent. of the acreage of Gravenstein apples signed up in the organization. Obviously, they had every dealer working with them. That is the reason they had such a satisfactory condition. The trouble is this. If you start out to get a central selling agency for a great many growers under different conditions, there is always some one wants this firm or that firm to be the selling agency,—and you set up jealousy and rivalry, which it is positively impossible to allay. But you simply say, "Here is an organization designed to prevent something which is injurious to the dealer, which is injurious to the grower, designed to maintain a price level which will be fixed by a "clearing house," as they call it in California, or a "quotation committee."

These are men chosen for that business who are familiar with the markets, who get telegraphic communications day by day on production here and there, what is moving here, what is moving there, what is on the track, etc. They will say that the conditions in the market today will justify a certain price for this commodity. Some will say that is price fixing. The Lord knows somebody has got to fix the price. Will you have the price fixed by experts named by your own association, or will you have it fixed by uncontrolled, unrestricted competition among dealers? You can take your choice. Just as long as you are satisfied to take that which comes from the unrestrained competition among dealers,—for which the dealers are not to blame, you understand, the bad results of the system will continue. But the practical proposition for growers is this:

Are you forever and ever to be contented to sell your stuff under these conditions? I don't believe you are.

If I had time, and I haven't, I could call your attention to the fact that this last year there have been a number of organizations developed over this country based on essentially that same principle. Invariably the result has been satisfactory, not always 100 per cent., for reasons that I have pointed out. This organization I am telling you about on the Eastern Shore that marketed potatoes did this thing. They marketed 4,400,000 barrels of potatoes in 1927.

Three members of the quotation committee, cost them just $11,000 for their services, altogether. If that quotation committee saved them 25 cents per barrel on the average price during the year it was $1,100,000 that went to the farmers. If it saved them a dollar it was $4,400,000 that went to the farmers. You hear men say that down in that country there has never been a crop like that of 1927 that was even finished digging. Invariably with a bumper crop thousands of acres are left undug because the price doesn't pay to move them. And here they had the most stupendous crop they ever had, and every bushel of it was marketed, and the very lowest quotation was $2 25. It seems to me that if you are looking for a plan by which the growers themselves can establish an agency to stabilize the market and maintain the highest possible price level that market conditions will justify, you can find it in the "clearing house" plan of marketing, and here is a very conspicuous example of that type of organization. (Applause).

PRESIDENT HARRISON: We will have the report of the Nominating Committee. Mr. Towson is the Chairman.

MR. TOWSON: Your committee begs to report that they have nominated:

For President—EDWARD MCCAIN
Vice-President—ALBERT ALLEN
Secretary-Treasurer—G. RUST CANBY

Executive Committee:

MR. HALE HARRISON, *Chairman*

J. WALTER ENGLAR
G. S. L. CARPENTER
ANDREW COHILL
R. R. WALKER
A. L. TOWSON
W. L. ALLEN
J. P. BURDETTE
FRANK HANSON
C. E. BRYAN

Membership Committee:

MR. VIERHELLER, *Chairman*

MR. BURDETTE
MR. WHITEFORD
ANDREW HANSON
ANDREW COHILL
MR. ENGLAR
MRS. HARRIS
MR. D. WALKER
MR. NOFSINGER
MR. LLOYD BALDERSON
MR. PAUL HAWKINS
MR. HERBERT THOMPSON
MR. HOOPES
MR. ROLAND PHELPS
MR. NEWCOMER

(It was voted on motion made by Mr. Walker, and duly seconded, that the report be accepted. It was unanimously adopted).

PRESIDENT HARRISON: I thank you gentlemen for the interest shown in this meeting, and hope that you have enjoyed the proceedings as much as I have. I hope that this meeting will produce beneficial results, and that we will all go home and produce a better crop of fruit.

(There being no further business, the Thirtieth Annual Convention of the Maryland State Horticultural Society adjourned at ten-ten o'clock).

REPORT

OF

TWENTY-FIRST ANNUAL MEETING

OF THE

Maryland Crop Improvement Association

January 4-5, 1928

The twenty-first annual meeting of the Maryland Crop Improvement Association was held in the Royal Arcanum Building, Baltimore, on Wednesday and Thursday, January 4th and 5th, 1928. The first session was devoted entirely to a discussion of the European Corn Borer and the second session to the fertility and management of soils in corn growing. The outstanding features of these addresses are given in the accompanying pages.

The early part of the 1927 season was wet and cold. The corn crop had a poor start and much of it was planted too late. By mid-season, however, weather conditions were unusually favorable and they continued favorable until late fall. The result was a much larger corn crop than the early reports would indicate and about a normal percentage of mature corn. The best interest ever shown in a state corn show was manifested this year. A total of 193 corn exhibits were on display, and almost without exception the entries represented first prize awards at other shows. The Baltimore show is a grand display of the best grown in the state, and in quality and care in preparation it is equal to that of any state.

TREASURER'S REPORT

January 1, 1927—December 31, 1927

RECEIPTS

Balance from 1926		$22.20
Received from dues 1927		43.00
Maryland Agricultural Society appropriation		236.00
Received from corn trays		12.00

EXPENDITURES

Jan. 4	Hennegan Bates Co.—silver pitcher	$18.00
Jan. 4	Expenses G. L. Shuster—judge and speaker	17.28
Jan. 13	Ribbons, corn show—Torch and Frantz	11.73
Jan. 6	Labor corn show	2.00
Jan. 15	Expenses speaker Dr. A. J. Pieters	2.53
Jan. 20	J. E. Metzger—supplies for corn show	2.20
Jan. 20	Premium awards state corn show	176.00
Jan. 31	Annual dues Maryland Agr'l Society	20.00
Oct. 29	Tags and wire cord	1.65
Nov. 3	Stamps	3.75
Nov. 19	Stamped envelopes	7.68
Dec. 13	Stamped envelopes	2.20
Dec. 31	Cash in bank	48.18
		$313.20

Baltimore, Maryland,
January 5, 1927.

We the undersigned, have examined the books of the Crop Improvement Association, and have found them to be correct.

Auditing Committee,

T. C. SHERRILL,
W. C. ROHDE.

J. E. METZGER,
Secretary-Treasurer

Any attempt to measure the importance and influence of an organization devoted to the promotion of the interests of agriculture is confronted by the danger of assuming influences which do not rightfully belong to it. Usually, the successful organization is founded and maintained for the consummation of a very definite project. When this aim is realized or when the management is such as to divert the efforts into other channels the organization generally disintegrates and soon ceases to function.

The Maryland Crop Improvement Association was organized nearly nineteen years ago for the very definite purpose of promoting the use and production of better seed supplies. At the time of its inception, there was grave need of organized effort of this type. Commercial seed supplies were unreliable both with respect to quality and purity. Seed stock inspection by state agencies was unknown, and the illicit and unscrupulous seed dealer's business flourished. Furthermore, the development of varieties was still in its infancy and the performance of the known varieties was not well known. This also was at the beginning of the period in American agriculture when every seed vender attached his own trade name to his seed supplies. Often an old and well known variety of farm seed bore as many as sixty trade names. Fulcaster wheat, for example, had even more names than this number.

The early efforts of the Crop Improvement Association were expended along two lines; viz, an educational campaign in which farmers generally were made familiar with the best varieties and the highest quality, and second, a regulatory system which required all venders of farm seeds to label their shipments according to analysis.

The educational campaign took the form of farmers' institutes and grain shows. In the former, growers were taught how to produce the clean, pure seeds of high quality. The growers themselves supplied much of this information. Every annual meeting of the association has had on its program a number of the most successful producers. These practical talks have been interspersed with reports on current investigations by scientists. The grain show, however, has always been the center of interest. It is here where the test of the growers' ability could be observed. A few farmers may have had a "better exhibit at home," but generally the best was in competition. Many of my readers will recall the keen competition which existed in the show at the Fifth Regiment Armory, Baltimore. Although the revived grain show of recent years has not attained the proportions of the old show, the rivalry has not abated, and the quality of the recent exhibit was never before equaled.

Many of the exhibitors in this state show of the past few years, hold the distinction of having won prizes at the International Grain Show.

The grain shows have been the means of fixing the standard of the products on a higher plane and of acquainting growers generally with the best producers. The efforts of the institute, the farmer's club, the meetings of the association, and in more recent years the Farm Bureau have been directed more particularly to the method. That these efforts have produced abundant fruit cannot be doubted. With the association members and with Maryland farmers generally, much of the improvement in corn yields and methods of production has been due to the educational value of these annual shows.

There is another method, however, which may be employed, and one which has been fostered by the Maryland Crop Improvement Association for the past seven years. It is the method of field and bin inspection, commonly known as seed certification. Under this method the association employs a competent but disinterested person to make a field and bin inspection of all seed lots offered for certification. The bin sample is subjected further to complete analysis. Only varieties of known productive capacity are certified and these only if pure and of high quality. Such seed stocks cost more to produce and usually sell at a higher price on the market. But the price is not prohibitive. Even the association members, who for years had been accustomed to renew their seed stocks when they become mixed, buy in only a limited quantity. This is the method that should be followed by all farmers. First, they should buy a limited amount of the best obtainable, and then they should proceed to increase this until they have sufficient to plant their entire crop. The dairyman would not buy a cow merely because she was eligible for registration. What he wants to know is her ability to produce milk and butter fat, and also what the records of her immediate ancestors were. In like manner varietal (breed) names in farm crops mean nothing. It is the strain or selection that is of the utmost importance.

These are some of the activities which the Maryland Crop Improvement Association has been fostering and promoting. Evidently they have been worth while to its members or otherwise the organization, composed as it is of a loosely woven membership fabric, would long since have been disbanded.

Ten Important Questions and Answers

1. How and when was the European corn borer brought into this country?
   ANS. It came into this country about 18 years ago in shipments of broom-corn from southern Europe, Italy and Hungary, some of which landed near Boston. That was before any law on the subject or any power to guard against such a pest had been provided. Little mention of the corn borer was found in European literature. It was not recognized or reported as one of the principal pests of Europe. Consequently, we were not on guard against it. This period, 1909-1910, when the broom-corn came over, was a period when we had a very short crop in this country. There was, therefore, an unusually large importation during that period, about 10,000 tons of broom-corn being brought in from abroad. The broom-corn was distributed at many different points, and a separate infestation also occurred in Ontario, Canada. The infestation which is now causing the most serious trouble is the result of the original establishment in Canada from which the spread has occurred throughout the Lake Erie region.
2. What is the life history of the borer? What is meant by the single-generation form? Two generation form?
   ANS. In the Great Lakes region, the corn borer reproduces but once a year. This is known as the single-generation form. In New England it reproduces twice a year. This is known as the two-generation form.
3. On what plants does the corn borer live?
   ANS. In Massachusetts the insect is now known to infest more than 200 different plants. In fact, the borer may infest any kind of succulent plant and

even plants that are ordinarily not considered succulent, such as the grapevine. It infests corn from the top clear to the ground, and occasionally goes into the ground 2 or 3 inches. Corn is the favorite host plant and in the lake region it is corn which is principally attacked. Around Boston, where corn is comparatively scarce, the borer feeds on a great diversity of crops and breeds in many sorts of wild plants and weeds.

4. How can the presence of borers be detected in a cornfield?

   ANS. Two easily distinguished signs of the corn borer in a field are: first, the broken tassel caused by the borer tunneling in the stalk and second, the large quantities of yellowish-white frass, pushed out of the entrance hole of a boror and either suspended there by the silken strands spun by the larva or collected between the loaf sheaths and the stalk.

5. How destructive has the borer been? How heavy the infestation?

   ANS. The possible damage from the borer in the Western area has been indicated in southern Ontario, where the damage in Kent and Essex counties has made it impossible to continue commercial corn growing. In these two counties there was a 3% infestation, or 3 stalks in 100 contained the borer, in 1922; a 30% infestation, or 30 stalks in 100 contained the borer in 1923; a total failure in 10 square miles in 1924; a total failure in 400 square miles in 1926. In the spring of 1927, a concerted clean-up was undertaken and the infestation was reduced 50%.

6. Can the borer be eradicated?

   ANS. Eradication is considered impossible. The object of control measures is to retard the spread of the borer and reduce infestation to a minimum.

7. What research work is being carried on in connection with the corn borer?

   ANS. The best trained specialists in the country, State as well as Federal, which include entomologists, agri-

cultural engineers, agronomists, chemists, ecologists, soil scientists, meteorologists, livestock specialists, and agricultural economists, have been made available for a study of all phases of the corn borer problem, including the life history, habits, and relation of the borer to environment, the breeding of varieties of corn adapted to corn borer conditions, the development of parasites of the borer, and the improvement of machinery for mechanical control.

8. How far is the borer likely to advance in a year?
ANS. The corn borer's average spread per year is about 20 to 30 miles. The direction and velocity of the winds at night during the 3 to 4 weeks in June and July when the moths are flying appears to influence the rapidity of spread in any one year. The area known to be infested in 1926 was 50% more than in 1925. It increased very much more rapidly in 1926 than previously.

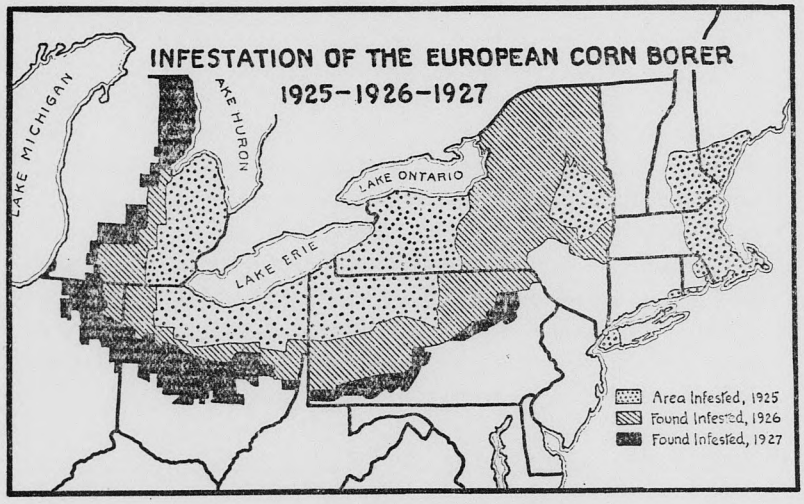
9. What constituted a satisfactory clean-up by a farmer in the infested area in the 1927 spring campaign?
ANS. All corn stalks, or other corn remnants of the 1926 crop in the field, in the barnyard or elsewhere about the farm, unless ensiled, has to be destroyed either by burning, plowing under or finely shredding. Stubble has to be plowed under or destroyed with a stubble beater. Any pieces in condition to harbor living corn borer left on the surface after plowing had to be hand picked.

10. What State Legislation is now in force?
ANS. Under State laws granting such authority, the State Department of Agriculture in Michigan, Ohio, and Indiana have issued 1928 regulations requiring a clean-up similar to that required in 1927, viz., the destruction of all corn remnants in a condition to harbor living borers. Under similar laws, Pennsylvania and New York are still operating under the 1927 regulations.

THE 1927 CAMPAIGN TO CONTROL THE EUROPEAN CORN BORER

REUBEN BRIGHAM,
In Charge, Corn Borer Information U. S. Department of Agriculture.

The corn borer promises to be the most dangerous enemy of America's corn crop that has ever appeared in this country. The corn borer 10-million dollar clean-up campaign of 1927 to retard the spread and reduce the numbers of borers was the most gigantic plant protection movement ever launched against an insect injurious to farm crops.



Just how complete is the destruction brought about by the corn borer under favorable conditions when no concerted effort is made to control it, was first seen in Essex and Kent Counties, Ontario, Canada. The borer was first discovered here in 1921. In 1926, it had caused a total crop failure over a block of territory 1,200 square miles in extent. The desolation of these corn fields, with the stalks brown and broken over, the immature and worm-eaten ears, and an average of 30 or more borers per stalk in many of the fields is what aroused those interested in the corn crop

of the United States to drastic action. In this same area in Canada, where a compulsory clean-up campaign was conducted for the first time in 1927, a 50 per cent. reduction in the borer population was obtained.

In the United States the corn borer has already got a good start in the corn country. It has steadily advanced westward across Michigan and Indiana to within 30 miles of Lake Michigan, and southward in Ohio until more than half of the State is now infested. The corn borer has already invaded the northern counties of West Virginia and in Pennsylvania is within a few miles of the Maryland border. The normal advance is 20 to 30 miles a year, but in 1926 and 1927, this was greatly increased, due to favorable borer conditions.

In spite of this alarming spread, the borer has not built up sufficiently in numbers to cause much commercial damage except in a very narrow strip along Lake Erie. The clean-up methods practiced last year prevented serious damage even in the most heavily infested areas. As an example, Lucas County, Ohio, probably the most heavily infested county in the United States last year, reduced the number of borers from 70 borers per 100 stalks to 42 borers per 100 stalks. This was done in a year favorable to borer development and due to a very wet spring unusually difficult to burn the corn stalks and plow under the stubble.

The large scale clean-up of old corn stalks, made possible by the campaign proved that the numbers of corn borers can be reduced and that due to the impracticability of a complete clean-up in slightly infested border areas, the spread to new territory can not be stopped. The method which proved effective in keeping the corn borer under control is proper disposal of the previous year's corn stalks, husks, cobs and the like. To be effective, this disposal must be complete and universal. *Every farmer must do it.*

One good way of disposing of corn stalks is ensiling. Corn put into the silo does not shelter living corn borers very long. The ones that escape the silage cutter, are killed by the fermentation. To catch the largest number of bor-

ers, corn should be cut low (within 2 inches of the ground) and early before the hibernating borers begin to seek the more moist lower stalk. The number of borers in stubble is about three times greater in stubble cut the middle of November than in stubble cut the middle of September. Special low-cutting attachments have been developed and made available by some of the larger implement manufacturers as a result of the necessity of corn borer control work.

Plowing the field of stubble or stalks is a good control measure when a clean field is obtained with no plant material on the surface. This means, however, that a more than ordinary job of plowing must be done. A clean plowed field depends as much on the skill of the plowman as on the type of plow used. With proper adjustments and wire attachments to drag under the trash, an excellent job of clean plowing was done with ordinary farm plows.

Burning, of course, kills the borer and all corn trash not disposed of in any other way must be burned if the borer is to be controlled. Farming under corn borer conditions will mean always disposing of the corn stalks, in a way to destory the borer before June 1. Corn stalks, husks, and cobs will not be scattered about the barnyard, or orchard, or other places, where it is hard to clean them up but will be ensilaged, finely shredded or cut, burned up or plowed under before the caterpillar emerges from the old corn stalk as a moth to spread the pest by laying eggs in new fields.

In the 1927 control program voluntary clean-up by the farmers was obtained by education, inspection and compensation. To supplement this voluntary clean-up, compulsory clean-up was enforced after May 1 by the use of legal authority, machinery and men. As a result of the control program, it is estimated 95 per cent. of the corn land was cleaned up by July 1, when moths began to fly.

The status of the corn borer in the infested states during the last three years can be seen from the following table:

Number of Borers per 100 Stalks			
	1925	1926	1927
Ohio	2	5	5
Michigan	2	12	27
New York	4	12	10
Pennsylvania	3	7	24
Entire Area	2	9	14

Indiana—Not given as number of borers in Indiana so far is less than one borer to 100 stalks.

As soon as the $10,000,000 was made available for a clean-up campaign, an educational program was gotten under way to make every farmer in the area acquainted with the clean-up requirements and to persuade him to do his own clean-up and collect his maximum of $2.00 per acre for extra labor involved. This work was conducted by the county agricultural agents and coöperating agencies. The methods used were demonstrations of clean plowing and low cutting; farmers' tours to heavily infested areas that the farmer might see for himself just what a menace the corn borer is; local news service; community meetings using charts, lantern slides, motion pictures and talks by specialists; visual aids such as circulars, posters, exhibits, lantern slides displayed in motion picture theatres and picture service to newspapers. Other educational means found effective in various parts of the control area were plowing contests, radio talks and local advertising. This intensive educational campaign was carried on until May 1, when the compulsory clean-up was begun.

The money appropriated for the 1927 corn borer control campaign was spent thus:

To Farmers (*extra labor fees*)	$4,200,000
Equipment (*machinery—gas—oil*)	2,750,000
Education (*extension work*)	250,000
General Expenses (*office equipment salaries*)	1,500,000
Balance (*for work in fall of* 1927 *and spring of* 1928	1,300,000
Total	$10,000,000

In formulating the 1928 control program, the impossibility of eradication of the borer was recognized and the program is based on coöperating with the infested States in a permanent and continuous effort to retard the spread and prevent as far as possible its increase to the point of commercial damage. This program includes scouting to determine the further spread of the borer as a basis for quarantine measures, the enforcement of the quarantine to prevent long distance spread by human agencies, and investigations in borer life history and environment, breeding corn adapted to borer conditions, parasites and mechanical control methods. Farm clean-up in the older infested areas will be obtained by a continuation of the 1927 educational campaign and State regulatory action to hold down the increase below commercial damage.

For a permanent and effective control of the borer, the clean-up measures must be included in the regular farm practice and this readjustment will be one of the aims of the 1928 program.

WHEN THE CORN BORER ARRIVES IN MARYLAND

By Ernest N. Cory,

State Entomologist, College Park, Maryland.

January 4, 1928.

When, instead of if, seems the appropriate word to use in connection with this important pest. The borer has been found in the southeast corner of Somerset County, Pennsylvania, just a few miles from the Maryland border in Garrett County, so that its spread to this state seems to be almost inevitable during the next flight season in June, 1928.

What are we going to do? What can be done? Two phases should be considered in regard to the first question: what will the entomologists do and what will the farmers do?

In answer to the first part, we will coöperate with the Federal authorities in quarantine work designed to prevent,

in so far as possible, the spread of the borer by human agencies, and in scouting to locate infestations in this state. We will, in addition, conduct a campaign of education designed to acquaint the farmers with the means of recognizing the borer in all its stages, to familiarize them with the life history, particularly as it bears a direct relation to control, and to prepare the farmers for the changes in agricultural practice that must be followed to insure the production of a corn crop even in the face of borer infestation.

What will the farmers do? If past experience is any criterion, I have no hesitancy in saying that Maryland farmers will coöperate heartily and intelligently in putting into practice those recommendations that seem to the corn borer committee the proper procedure in combatting this pest. A corn borer committee was organized at the University in January, 1927, with the idea of securing the greatest amount of coördination of all the forces directly concerned in borer control. This committee consists of the Head of the Agronomy Department and the Extension Agronomist, the Head of the Agricultural Engineering Department, the Extension Entomologist and the State Entomologist. The investigations of the Federal and State entomological forces have shown that corn borer control is essentially a problem of clean-up prior to the time of appearance of the first moths. In the infested states, May 1st has been set as the dead line. Though the moths do not appear quite so early, that date gives ample time under ordinary weather conditions and allows some time for any additional work that may be found desirable.

The thing that I want to impress upon you, and which I wish you would carry back to your neighbors, is the absolute necessity to plan eradication measures just as soon as the borer is found on your place or in your county. One borer will do you no appreciable damage the first year, or possibly its progeny in the second year, but if no control has been practiced in the early stages you will likely find that starting in the third year is like being "left at the post." Farmers in many sections have laughed at the scouts

and entomologists when told that one, two or three borers had been found on their places, and have paid no attention to the warnings, much to their sorrow and loss later on. Immediate action when the borer reaches your section is imperative. You must learn to live with the borer and to do so you must practice clean culture.

What can be done? Low cutting of the fodder offers one of the best means of combatting the pest. It has been shown that relatively few borers live over in stubble that is not over two inches high and a clean job of plowing can be done on such stubble. We all will have to revise our ideas of what constitutes a clean job of plowing. Under corn borer conditions, a clean job means turning down all portions of the stubble so that no refuse remains on the surface for the borers to crawl into to complete their life cycle. Such a job can be done by using wide bottom plows, especially designed for borer control.

Since the larvae live in the fodder and ears, shredding, grinding and ensiling all corn is necessary to insure destruction of the larvae. These processes make better feed and bedding.

Where poor plowing is done, hand raking, picking up and burning must be done to insure the destruction of all larvae. This is the most expensive phase of borer control but can be obviated largely by low cutting, shredding, ensiling and clean plowing. If corn stalks are left standing, they should be broken down with a railroad iron when the ground is frozen, the stalks raked into windrows and burned before plowing is done.

Attend your local meetings this winter and become familiar with the insect, its damage and control; send in to the University any insects you suspect to be borers so that an early and exact identification can be had and resolve now to start control work promptly and thoroughly, remembering that unless you so do, you not only jeopardize your own future corn production but, likewise, that of your own community and ultimately that of the state at large.

MANAGEMENT OF HAGERSTOWN SOILS

Dr. Frank D. Gardiner, of the Pennsylvania State College, gave an illustrated talk on management of Hagerstown (limestone) soils. The following summary of his talk was taken by the Secretary during the morning and from tables used by him.

The Pennsylvania fertilizer experiments were begun in 1881, or 47 years ago. At the beginning, the land was in a rather high state of fertility. The crops grown were corn, oats, wheat and mixed clover and timothy, each one year. In the first forty years there were harvested 39 crops of hay and 40 crops of each of the others or ten harvests of each crop on each of the four ranges.

These data on the management of the Hagerstown soils, especially the loams and clay loams, are of great interest to Maryland farmers, for several reasons. First, Maryland has considerable farm land with soils similar to those on which the Pennsylvania results were obtained; the main difference being that of the relatively warmer climate here. Second, they represent the only set of experiments on this soil type of sufficient duration to fully demonstrate the effect of a crop rotation under different systems of soil fertility, maintenance and management.

The experiments have long since demonstrated that single fertilizer ingredients, such as ammonia, superphosphate (acid phosphate), or potash, are not sufficient within themselves to maintain the original fertility level in these soils. The superphosphate reflected greater benefits than either of the other ingredients. In practice then, the no treatment, and each of the treatments having single ingredients only would necessarily be regarded as unsatisfactory fertility systems on these soils. That is, rotations alone under good cultural conditions and incomplete fertilization will permit the soil fertility to become depleted. The question of how soon this takes place naturally arises. On the Pennsylvania plots without any fertilizer treatment, the low level seems to have been reached by the end of three rotations (12 years). The same is true, although slightly less pronounced, on the ammonia and potash plots, but the low

fertility level was deferred until after the 16th year, in the case of the phosphorus plots. These results concern both the farmer who farms his own land and the land owner who tenants his fields. On tenanted land, unless the contract is drawn carefully, the fertility of the soil may be reduced, unsuspectedly, to such a low level that farming would not be profitable to either tenant or owner.

Superphosphate is the chief limiting factor in this soil. Its use increased the yields 43.8 per cent. over the nearest check. The increases for nitrogen and potash were 12.6 and 13.8 per cent., respectively. When all three elements were supplied, however, as in the case of plot 26, a satisfactory yield level was maintained.

The accompanying table of total yields will indicate in a general way how effective each of these fertility systems was during the forty year period. The average yields and values for the untreated plots are given for comparison.

Period	Average of Untreated Plots		Nitrogen, Phosphoric Acid, Potash		Six Tons Manure	
	Yield	Value	Yield	Value	Yield	Value
1882-1895	14,153	$94.11	18,117	$120.44	16,670	$110.08
1886-1889	14,784	98.53	18,050	117.94	17,828	118.01
1890-1893	14,474	96.35	18,906	120.24	18,631	120.89
1894-1897	11,567	77.17	19,118	125.24	17,549	115.80
1898-1901	8,685	56.58	15,579	98.60	15,551	99.41
1902-1905	10,119	66.32	17,779	118.79	18,014	119.93
1906-1909	8,969	59.19	18,780	121.17	17,956	118.76
1910-1913	9,073	61.28	18,170	120.30	17,284	117.13
1914-1917	8,559	58.01	17,528	116.54	16,856	116.96
1918-1921	7,709	54.91	18,184	124.57	16,188	113.63
1882-1921	10,829	72.24	18,021	118.38	17,256	115.06

The complete fertilizer treatment that gave the best results for the 40 year period was the one made of 24 pounds of nitrogen (about 150 pounds of nitrate of soda), 48 pounds of phosphoric acid (about 300 pounds of superphosphate) and 100 pounds of potash (equivalent to 200 of muriate of potash). This mixture would represent an analysis of 3.7-7.4-15.5. The Pennsylvania investigators feel confident that one-half this amount of potash would have been sufficient. In fact, they state that 500 of a 3-10-10 if used on a residual

Hagerstown soil would be ample to maintain a satisfactory fertility level. (Where ample manure is available and where clover crops are satisfactory, it is probable that a 2-12-4 or a 2-8-5 would be quite satisfactory under Maryland conditions where the seasons are longer).

The manure plots are doubtless the most interesting. Manure was applied in the three rates 6 tons, 8 tons and 10 tons. The sums of the annual acre values after deducting the cost of the manure were $97.06 for six tons of manure, $93.59 for eight tons and $93.32 for the ten tons. The higher rates of application gave increased yield but these increases were not commensurate with the increased cost. These results suggest to all of our farmers that a light application spread over a large area is more profitable than heavy application on a more limited acreage. It is generally thought that our manure supplies are growing less and less (there were enough animals on Maryland farms in 1927 to produce about 1.1 tons of manure for each acre of tillable land). If the supplies are becoming limited, annually, then it is all the more important that what is available should be properly conserved and used judiciously.

Manure, as is generally known, is deficient as a phosphorous carrier. Merely increasing the quantity applied per acre will not remedy the lack of balance between the essential elements. To properly balance stable manure, about 50 pounds of superphosphate should be applied to the soil for each ton of manure used. This will adjust the manure-phosphate mixture so that the nitrogen-phosphoric acid-potash ratio will be about 10-12-10.

CORN FERTILITY WORK IN DELAWARE

By Professor C. R. Rusk.

The yields given here were obtained from experiments begun in 1908. One set of plots has been planted to corn each year since that time. Another set of plots has had a rotation of corn (cover crop of rye and vetch), soybeans, wheat, hay (timothy and red clover mixed). These plots were arranged in four blocks so that each crop was grown

yearly upon the given fertilizer treatments. The fertilizers were put on in the various combinations as follows: Nitrate of soda, 125 lbs. per A., superphosphate, 250 lbs. per A., and muriate of potash 75 lbs. per A. Lime was applied every fourth year at the rate of 1,500 lbs. hydrated lime per A.

The outstanding results may be summarized as follows:

1. Potash is the first factor that limits corn production, phosphoric acid second and nitrogen third on sassafras silt loam.
2. Potash produced the greatest increase in the percentage of sound corn of any of the single fertilizer materials applied.
3. Lime produced decided increases in the quantity and quality of corn when used in connection with muriate of potash.
4. Gains ranging from 13.9 bus. to 27.8 bus. per acre were made on corn grown in a crop rotation over corn grown in continuous culture.
5. The percentage of sound corn was materially increased when grown in a crop rotation.
6. Manure or fertilizer did not supplant the values received from a crop rotation.

TABLE I

SHOWING YIELDS AND PERCENTAGES OF SOUND CORN FROM VARIOUS FERTILIZER AND LIME TREATMENTS

Treatment	Total yld of Corn (bu. per A)		Percentage of Sound Corn		Yield of Sound Corn (bu. per A.)	
	Lime	No Lime	Lime	No Lime	Lime	No Lime
None	42.5	42.9	59.5	60.8	25.3	26.1
Nitrate of Soda (N)	43.3	44.1	62.0	64.9	26.8	28.6
Super Phos. (P)	41.0	43.1	60.6	63.9	24.8	27.5
Muriate Potash (K)	65.8	54.8	84.1	73.2	55.3	40.1
N P	43.8	48.9	69.5	65.2	30.4	32.0
P K	71.4	70.5	83.3	86.9	59.5	61.3
N K	73.2	67.1	85.1	82.7	62.3	55.5
N P K	77.5	76.5	87.0	89.1	67.4	68.2
Manure (5 T)	80.6	78.0	86.6	86.9	69.8	67.8

TABLE II

COMPARING YIELDS AND QUALITY OF CORN FROM CONTINUOUS AND ROTATION SERIES

Treatment	Continuous		Rotation		Gains for Rotation	
	Bu. Corn per Acre	Per Cent Sound Corn	Bu. Corn per Acre	Per Cent Sound Corn	Bu. Corn per Acre	Per Cent Soundness
None	16.7	28.6	42.9	60.8	26.2	32.2
Manure 5 Tons	56.5	78.6	78.0	86.9	21.5	8.3
Manure 10 Tons	56.9	81.5	84.7	88.6	27.8	7.1
N P K	57.8	78.3	76.5	89.1	18.7	10.8
2 (N P K)	65.8	88.3	84.5	91.3	18.7	3.0
P K—G M 1	56.6	79.8	70.5	86.9	13.9	7.1
Green Manure	23.2	30.0				

1—Minerals alone on Rotation Series.

EFFECT OF PHOSPHOROUS ON CORN YIELDS

By J. M. Snyder.

The use of superphosphate on the corn crop in Maryland is on the increase. The Experiment Station at College Park has been carrying on some experiments for the last ten years and the results obtained from these show that on most of the soils good results are obtained for corn where superphosphate is applied.

The effects of phosphorous or any other fertilizer cannot be determined in one year's use, because climatic conditions, which have an important bearing on the solubility of the fertilizer, are seasonal and results from one year would not apply the next year. In order to get the best results from the use of your fertilizer it is not just necessary to put the fertilizer on the soil and think that you are going to get the good results, for you will not. The best results are obtained when the fertilizer is thoroughly mixed with the soil and this cannot be done unless a good seed bed is prepared so that the soil is in a good physical condi-

tion. This has probably been told you many times, but if some of the fundamentals of farming were followed more closely, the farmer would get better results from the amount of money invested in fertilizer. All of you have seen corn planted on land that was not in good condition to receive it. With some crops, better results are obtained by broadcasting than by putting in the row. In row fertilization a smaller amount of fertilizer will probably give as good results as the larger amount broadcast. All the fertilizers on our plots are put on broadcast, not because we think it is the best, but because with the size of the plots and small amount applied, it is the only way to do it.

The amount of fertilizer applied also has some effect on crops, especially with the nitrates and potash. If a large quantity of nitrates or potash fertilizers are applied, there is liable to be some harmful effect. The phosphatic fertilizers are the least harmful of any.

Practically all farmers in the state practice some sort of rotation. This is as it should be, for when a farmer works out his rotation, it is the time for him to work in his fertility programs. It may be that in some rotations corn does not receive the direct application of fertilizer but that it depends on the residual effect for its nutrition. Some rotations that we use on some of our fields are corn, soybeans, wheat, grass, with corn and wheat receiving the fertilizer; tobacco, corn, wheat, grass, with tobacco and wheat receiving the treatment; tomatoes, corn, wheat, and grass with tomatoes and wheat receiving the treatment.

Our field at Ridgely is on a sassafras sandy loam. The soil is typical of a large section in the northern parts of the Eastern Shore. This field has been in operation for

TABLE I

CORN YIELD AT RIDGELY, MARYLAND

Fertilizer Treatment Pounds per Acre	Average Busnels per Acre —9 years	
	Limed	Unlimed
No Treatment	67 bu.	63 bu.
Wheat, Super Phosphate 250 Tomatoes, Super Phosphate 500	75 bu.	69 bu.
Wheat, Raw Rock Phosphate 500 Tomatoes, Raw Rock Phosphate 500	72 bu.	69 bu.
Wheat, Basic Slag 250 Tomatoes, Basic Slag 500	72 bu.	69 bu.
Wheat, Nitrate of Soda 100 Super Phosphate 250 Tomatoes, Nitrate of Soda 200 Super Phosphate 500	74 bu.	70 bu.
Wheat, Nitrate of Soda 100 Potash 100 Tomatoes, Nitrate of Soda 200 Potash 200	74 bu.	70 bu.
Wheat, Super Phosphate 250 Potash 100 Tomatoes, Super Phosphate 250 Potash 100	81 bu.	71 bu.
Wheat, 4-10-10, 400 Tomatoes, 4-10-10, 900	81 bu.	71 bu.
Wheat, Manure 10 tons Super Phosphate 250 Tomatoes, Manure 100 tons Super Phosphate 250	86 bu.	80 bu.
Wheat, Manure 10 tons Raw Rock Phosphate 500 Tomatoes, Manure 10 tons Raw Rock Phosphate 500	85 bu.	81 bu.

Crop rotation: Wheat, grass, tomatoes and corn. Field located on sassafras fine sandy loam.

ten years with a four year rotation of tomatoes (crimson clover), corn, wheat, and grass. The fertilizers are put on the tomatoes and wheat. This is a case where the corn does

not receive a direct application. The result shown on Table I indicates that by using superphosphate all through the rotation has increased the yield to about eight bushels over the check. When superphosphate or raw rock is used in conjunction with manure, the yield on corn goes up. These yields on corn are all due to residual effect. The question might arise as to whether the phosphorous is not lost, but it has been established that only a very small part of the unused phosphorous is lost through leaching, so the benefit from the phosphorous would also be noticeable in the corn providing the preceding crop did not use it up.

At Sparks, which is on the Chester silt loam and where the rotation is corn, rye, soybeans, wheat, and grass, the fertilizers are applied on the corn and wheat. The table will show the results obtained on corn and yields obtained from superphosphate were very gratifying for this fertilizer.

TABLE II

CORN YIELDS—SPARKS, MARYLAND

Fertilizer Treatment Pounds per Acre	Average Bushels per Acre —5 Years
No Treatment	55 bu.
Wheat, 4-10-4, 400 Corn, 4-10-4, 200	56 bu.
Wheat, Nitrate of Soda 100 Super Phosphate 267 Corn, Super Phosphate 200	56 bu.
Wheat, Super Phosphate 400 Corn, Super Phosphate 200	64 bu.
Wheat, Manure 8 tons Super Phosphate 200 Corn, Super Phosphate 200	65 bu.
Wheat, Manure 8 tons Raw Rock Phosphate 400 Corn, Raw Rock Phosphate 600	56 bu.

Chester loam.
Crop rotation: Corn, (rye), soybeans, wheat, grass.

On the field at Princess Anne, Maryland, on the Eastern Shore, where the country is low and flat and the soil is an Elkton silt loam, which is a whitish or gray poorly drained silt loam, the results where superphosphate is used in the rotation were not so successful. It appears that this soil needs something besides the phosphate to produce good corn. This soil gets so tight and hard in the summer and is so

TABLE III

CORN YIELD—PRINCESS ANNE, MARYLAND

Fertilizer Treatment Pounds per Acre	Average Bushels per Acre —6 Years
No Treatment	27 bu.
Wheat, 4-10-6, 400	39 bu.
Wheat, Nitrate of Soda 150 Super Phosphate 250	32 bu.
Wheat, Super Phosphate 40	21 bu.
Wheat, Manure 10 tons Raw Rock Phosphate 400	35 bu.
Wheat, Manure 10 tons Super Phosphate 500	40 bu.

Elkton Silt Loam.

Crop Rotation: Corn, wheat, grass, soybeans, (rye).

void of readily available plant food, that it needs the potash and nitrogen to produce a crop. What is confusing here, is that over a period of six years phosphate alone on the rotation seems to have some detrimental effect because it is lower than the check. Where it is used in conjunction with some of the other elements it immediately shows an increase.

The field at Leonardtown, which has been in operation for eight years, shows some good results. On this field, which is a Leonardtown loam, and is a right extensive soil on the western shore, a large number of different combinations of fertilizer were used. The rotation on these plots is tobacco (crimson clover), corn, wheat, and grass. The fertilizer treatments are put on the wheat and the tobacco, with crimson clover sown in the last cultivation of the tobacco and plowed under for the corn. Half of these plots are limed and half are not limed. This soil is one that is right difficult to handle, but at the same time with judicious handling it is quite responsive to good treatment.

TABLE IV

CORN YIELDS—LEONARDTOWN, MARYLAND

Fertilizer Treatment Pounds per Acre	Average Bushels per Acre —8 years	
	Limed	Unlimed
No Treatment	24 bu.	22 bu.
Tobacco, Super Phosphate 1000 Wheat, Super Phosphate 500	32 bu.	25 bu.
Tobacco, Raw Rock Phosphate 700 Wheat, Raw Rock Phosphate 350	32 bu.	31 bu.
Tobacco, 5-10-0, 700 Wheat, 5-10-5, 350	32 bu.	29 bu.
Tobacco, 0-11-14, 700 Wheat, 0-11-14, 350	55 bu.	54 bu.
Tobacco, 4-10-6, 800 Wheat, 4-10-5, 400	54 bu.	54 bu.
Tobacco, Basic Slag 500 Wheat, Basic Slag 300	27 bu.	31 bu.
Tobacco, Manure 10 ton Super Phosphate 500 Wheat, Manure 10 ton Super Phosphate 500	65 bu.	58 bu.
Tobacco, Manure 10 ton Raw Rock Phosphate 1000 Wheat, Manure 10 ton Raw Rock Phosphate 1000	70 bu.	60 bu.

Leonardtown Crop Rotation: Tobacco, (crimson clover), corn, wheat, and grass.

REPORT

OF

Twenty-first Annual Meeting

OF THE

Maryland State Dairymen's Association

Including Conference of Maryland Beef Producers

Baltimore, Maryland, January 5, 1928

The Annual Meeting of the Maryland State Dairymen's Association and Maryland Beef Producers, held in the Odd Fellows Hall, Baltimore, Maryland, convened at ten-thirty o'clock, Mr. R. S. Snader, President of the Maryland State Dairymen's Association, presiding.

PRESIDENT'S ADDRESS

By R. Smith Snader, New Windsor, Maryland.

Gentlemen, please come to order, and we will start this meeting. With our affiliated meetings, we have about six meetings going on this morning, and that splits up our crowd. This was to be a joint meeting of the Beef Growers and Dairymen. I don't believe there are many of the growers here. I don't see any.

Fellow dairymen, I want to take this opportunity in opening this meeting, of wishing you all a prosperous and a happy New Year. It is so near the beginning of the new year of 1928, that I want to extend to you that greeting.

In order that we may have a prosperous New Year in 1928, it depends largely upon the coöperation that you producers give the members, the officers of the organization. I am not making any complaint about the coöperation that

we have received in the past year, 1927, because the coöperation that we have gotten from you people has been more than one could expect. You have delivered the goods, and you have helped us as officers and directors of your Association to market your milk in an orderly manner. It is only through your coöperation that this organization has been made a success. Now, I, as president of your organization this morning, am not going to blow my own horn, because a fellow can't blow his own horn so well as the other fellow can blow it sometimes for him. I am not going to tell you about the achievements that have been made in our organization, because I think that you members here represented are men that have taken an interest at most of our meetings, and most of our conferences. You have made it your business to be here, and to get the details, and to know just what is going on in your organization. I am only sorry this morning, that so many of our members back in their homes, back in the districts, are not here. They don't get just the things that they should get; oftentimes they just don't understand our set-ups and our problems in marketing this milk.

I think if they were here and could get in close touch with us and rub elbows with us, that we could tell them the problems and set-ups that are necessary in order to market this milk to bring you the best results. I don't think we'd find those little kicks around at the country stores and blacksmith shops which we often run into. But that is part of the human make-up. You know, when we are getting results, some people think they ought to have just a little bit more, and now and then they will kick and say, "Well, I am just kicking because I ought to have more, and I really don't mean it. So it is in these conferences, men, that we can get together, and that we can pool our thought and work out a program that you and I can back, and go back to our sections and feel that the meeting was worth while, and that we have found out things in the set-up of our organization that we can benefit others with.

I am not going to take much of your time this morning. While I am glad to say my voice is a little better than

it was a year ago, I think as time goes on I will be back to normal again. We have this morning a pretty important program and a full program.

Mr. Heaps has a chart he wants to go over with you, starting back in 1920 up to the present time. It is a real story, and I know you want to hear that. We also have Dr. Pickens on our program, who is from the State University, and he has a talk that I know you will be interested in. We also have Dr. Reed, from the University of Maryland, and I know you will all be anxious to hear him.

The life of any organization, fellow dairymen, depends upon the service that that organization renders its members, and I do feel that in the management of our organization, Mr. Heaps has endeavored to give that service. I often go into the office, and he is busy replying to letters and answering communications and trying his best, and I know he has given service, given out to you members just the things that you write in about. I feel that the success of any organization is in letting the members know just what is going on in that organization, and that is what we as officers, our efforts, and everything that we can do—we want you to know just what is going on in that organization.

The set-up of our organization is such that we can market the milk that you produce every day. You produce a fresh crop of milk every day, 365 days of the year, and whether you produce forty gallons a day, or whether you produce twenty gallons, that milk comes along, and we market that milk under a plan that we have set up, so that we can make you the best returns for that product. I feel very proud this morning to say that I feel that our market here in Baltimore City has returned to the farmer during the last five years, a price above any other market that we know of in the United States. That is taking in a pretty wide territory.

Through our national organization we are in touch with all the milk marketing organizations over the United States, and I feel that Mr. Heaps will back me up in what I say,

that we have returned to our producers a price for their product that is above any other market we know of in the United States.

That is all the time I am going to take this morning. I am mighty glad to see as many of you here as are here, and as I look this audience over, I see representative men from the different localities in the milk shed, and I feel that you men that are here this morning will get a story that you can take back to your neighbors and explain to them the policies of our organization.

I thank you very much for having this opportunity of having a word with you. (Applause).

Our first speaker on the program needs no introduction to this body of producers, Mr. I. W. Heaps, Secretary-Treasurer of this organization, who will now address you. (Applause).

ADDRESS

By I. W. Heaps, Secretary-Treasurer.

Mr. President, Ladies and Gentlemen:

I think about the hardest thing I have to do is to try to talk, I don't know how many times a year, on this subject. There is nothing new about the milk business. It is the cow first, last, and all the time, and it is awfully hard to talk many times about the same subject without saying the same thing over and over, and I wonder sometimes, if the shippers don't get tired of hearing it.

But there is a great reason why we might think more about the business that we are engaged in. I feel sometimes that the farmer, and the dairyman especially, thinks that his occupation is very unimportant, that he doesn't rank anywhere in the class of manufacturers. And yet, I don't know anything else he is doing but manufacturing. He is certainly engaged in the manufacture of a product, and I can see no difference in a sense, between a cow and any other piece of machinery. It takes raw material to go into any machine to bring out a finished product. It takes raw material to go into the cow to bring out our finished product. Therefore, we have a similarity. If that

piece of machinery is not working properly, it will not bring out a proper product. Neither will that cow produce a good product unless she is in working order.

When we get down to that basis, we are really manufacturers, and we are engaged in quite an industry. If we would stop to think that we run that machine 365 days in the year, that it takes the same attention every day, the same raw material, the same finished product, we are very much engaged in the manufacturing industry.

We find that in other manufacturing industries they have a very distinct advantage over us dairymen, because whenever they find a surplus of their product on the market, they simply shut down some of their machinery, and they manufacture a quantity in accordance to the demand. We can't do that. Every one of those machines on your farm is going to work every day, and you have got to keep on feeding that raw material whether the product is needed or not.

That brings us up to the real problem of marketing milk. It would be an awfully easy matter if we could just produce the amount of milk that the buyer wanted to buy and the consumer wanted to consume; but your machines don't work that way. We may have a certain amount of that product today, and tomorrow a considerable increase or decrease as it may be, but nevertheless, that producer expects us to market that daily output every day. It can't be done, men, at one stipulated price, and that brings us to the point that we want to talk especially about this morning.

We hear so much from the producer, "I want more basic milk. I want you to give me more basic milk." First, men, we must have the thing before we can give it, and I want to say frankly, that we haven't any basic milk to give. This is an old, old story. We have given to each producer as near as we know how, his proportionate share of the basic fluid market, and that is based on his actual production of the fall of 1921, '22 and '23. There was no restriction whatever. He had a free market. Since that time we have added to that basic amount his proportionate

share of the increase in the market in accordance to the amount of surplus milk that he has produced during October, November, and December.

We don't know how to do better. We never decreased a man's basic amount. We are proud of that. We hope we never will have to. We want to go forward, we never want to go backwards.

Now, it was quite a bold thing to do, in 1924, to attempt to limit, or in a sense, limit a man's basic production. I was told by another organization management that I would bust the Maryland State Dairymen's Association, that I had gone crazy, and everything I think that he could say without calling me bad names. That hasn't been true, men. We haven't busted any organization, and we believe we have builded a stronger organization, and we know that we have returned you more money for your product in the last four years than any period in the life of the Maryland State Dairymen's Association, notwithstanding the fact that we have not reached the high points of fluid prices. But we have stabilized those prices throughout the year.

No man can make money in the milk business, or anything else, by getting a fair price this month and a destructive price next month. You have got that machine, you have got to operate it, you have got to feed it. Therefore, our aim has been to get you a market for your product so that you can afford to feed that machine and to operate 12 months in the year.

I have some charts here this morning that will tell you better than I can, what we are doing. On this first one, this *solid line* here is the 100 per cent. basic limit. We started out with 1920. That is as far back as we had the records worked up. We could have gone back to the beginning of the organization, but didn't think it was necessary, as we only had four years of controlled production, and we wanted to compare with four years of uncontrolled production. I want you to get this, men, that from 1920 to 1924 there was no attempt made to control production, and the price for your product was based on the amount

of your product on the market. In other words, the law of supply and demand operated 100 per cent. during that time. This is the result that we have.

In the beginning, in 1920, we had a price of 40½ cents a gallon for your average or basic milk. That was averaged the previous fall. Conditions changed, and evidently that price was too high; perhaps it induced too much production. We had no outlet for that excess milk. Therefore, the price broke in the latter part of 1920. But it was our organization's desire as well as every other organization at that time, to get for the producer, each and every one, the best possible price. In other words, we could go back to you people and say, "Oh, look what we did. We got you a certain price for milk." If the price dropped, we went back and said, "Well, we are sorry, but you flooded the market. We couldn't help it." We always had a defense. But that defense did not put money into the farmer's pocket.

That program operated up until the beginning of 1924. So you find the price here dropping, going up again, and in the beginning of 1921 going down, down, down, down until it dropped in about six months from 40½ cents to 26 cents, and then for two months dropped to 25 cents.

Now, that was the price of your basic milk for 18 months, 26 cents, except two months when it was 25 cents. That was the farmer's price, and was a distinct result of this high price.

What was the answer? The farmer lost more money in this period by far, than he gained in this period. We gave it to him here, we took it away here. He bought cows here, he couldn't sell them here. He didn't want them, and nobody else wanted them. He had to keep them. This period here forced out of business, no doubt, a number of producers.

The market cleared up, came back, and the price here rose again. We had a fairly clean market, and then along in 1923 there was a jump from 30 to 36 cents. That price only lasted about six weeks and then began to drop, and by December 1st, we were back to 31 cents.

January 1, 1924, was when we adopted this control policy of production, and there has been only one change in price since January 1, or December 1, 1923, until October a year ago, when the price went from 31 to 33 cents.

Now, you can see, men, just what a price like that means as compared with a price like this. This dotted line here with the high price during the four years of 33 cents returned to our producers for the same amount of milk in this period as against this period, or over a half million dollars. There was only one price change, and yet, our producers received for the same milk over a half million dollars more than in the previous four years. I want to ask you—did it pay? You men know when you get under that cow, to milk her, you count the gallons of milk going out, transfer it into dollars, multiplying it by thirty days, and you spend it; you know just where it has gone. You can pay this bill and that bill. Why? Because you know practically just how much money you are going to get. You know whether, when you are buying that cow, you can afford to buy her or not, whether you are going to get a market and a fair price for the milk.

In this period you didn't know just what the price of milk was going to be. You didn't know whether you wanted to buy cows or sell cows. You didn't know whether you wanted to equip yuorself to stay in business, or whether you wanted to get out of business. Just think about all those things, and then ask yourself whether our present policy in Maryland is good or not.

We have another story that is tied up with this, and that is the surplus price, or Class 2 price. Here in this bottom chart this solid line again represents our basic price line. This dotted line is the surplus price. You can see what was happening, of course, all the time in the ups and downs of the surplus price. We find back here in the first chart that during this period we not only got a low basic price, but we got low surplus prices. Our surplus price for that four years averaged lower than our surplus price in the last four years. That again, means dollars and cents. You will note that our low points here in 1921, our surplus price,

reached as low as 14 cents a gallon. In 1927, the lowest point, and only for one month, is 22 cents, quite a difference. Now, when we take the difference in dollars and cents between the four years of controlled production against four years of uncontrolled production in the basic price, and on a dollar and cent basis between the four years of production on the surplus price as against four years of no control, we find that we returned to our farmers in the last four years about $1,000,000 more for their product than we did in those first four years of uncontrolled price.

That million dollars is rather a big pile of money, and probably you individual farmers didn't just realize what was actually happening. Probably what advantage you got individually may have only been $200. But take it as a whole, and it means a lot. We find that that million dollars would buy 5,700 dairy cows at $175.00 each. We find that that million dollars would buy 20,000 tons of dairy feed at $50.00 a ton. Now 5,700 dairy cows or 20,000 tons of dairy feed is not an item that we want to pass up. Yet, that is what happened. That is the result of the policy of controlled production as against a policy of no control.

I have another chart here that brings out still another thing in addition. I want to show that we not only got a better price for our surplus milk in the last four years, but that we handled an enormous amount more surplus or Class 2 milk which should have operated in receiving a lower price. How could we have ever handled the amount of milk that we handled during this period under this policy? This chart shows just how class 2 milk has grown in the last four years over the previous four. This is four years of uncontrolled production, and is the result of this juggling of prices. The higher price for Class 2 milk, and the stabilized price on basic milk brought about this production.

We handled something over 11,000,000 gallons of excess milk in that year, and received and returned to the farmer a far greater price than we did with the smaller production and lower price in these periods.

Those are just some facts, men, that I thought you could probably get better from the chart than I could give you

in figures, because sometimes we get a better impression from pictures than we do from reading, and that is the point that I want to bring out this morning, the results of what we attempted to do in the last four years, and have succeeded with your coöperation. I want to say here, that while we do have an immense demand for increased basic quantities, after all, it is human, but when the story is explained to the shipper, if we can ever get to him, we don't have any further trouble. The greatest trouble we have is the fellow who doesn't come close enough to us. He stays far away, and probably cusses somebody because some miracle hasn't been performed. He doesn't stop to think that he may be shipping four times the amount of milk at that time than he was some other time.

We have got to absolutely go out in the producing territory and explain to the shipper. His production will drop around ten gallons a day in the fall and go back to 30 or 40 in the spring, and he doesn't know why he shouldn't get 33 cents for all the milk he produces whenever he wants to produce it. The consumer doesn't consume it that way, and the buyer doesn't buy it that way. We want just as many quarts of milk, and in fact, we want more as a rule, in October than we do in any other month. We want those quarts of milk on the doorstep every morning in the year, and if you don't produce your normal share of that production, somebody else does, and you shouldn't expect when you come back to tell that other fellow to step aside. We can't do it that way, and our present policy does not work that way.

We certainly have not taken any unfair advantage of any producer. He has always been warned and notified beforehand what is going to happen. Last July and in July a year ago, each of you was notified that in 1926 if he produced in 1926, 80 per cent. of the present average, at that time, he would be allowed to maintain that average. That was carried out. In 1927, he was notified that he could produce 90 per cent. of his then present average, and would be allowed to continue on that average, and we expect to carry that out.

Now we find shippers coming in and saying this happened, and that happened, and we are not fair to them, that they are going to lose their average, etc. If we would say that the shipper who produced 89 per cent. has a right to go on, we would have to say that the fellow who produced 88 per cent should go on. If we said that the fellow who produced 88 per cent. could go on, we should have to say the fellow who produced 87 per cent. could go on, etc. Tell us where we stop? We have to draw the line on 90 per cent. We have got to do it. That is the dead line, and if you produce 89 per cent., you will get the benefit of every gallon you produce. That is all any market ever did do. We offer 10 per cent. as an inducement to hold up your production in the fall and not allow it to go down, and then have a terrific production in the spring.

In addition to that, I want to say that we have endeavored to take over the supply of milk for ice cream merchants in the city. The Health Department has passed the same rules now for ice cream purposes, as we have now and have had in the past for milk. They have gone so far as to say that if we will produce that milk for ice cream purposes, they will favor this market, and that our milk will be consumed before any additional or outside milk coming into the market.

Now, men, as I see it, we have either got to take hold of all of this market or stand the chance of somebody else pushing us aside. There is milk and there is cream, as you know, on the outlying districts that are scrambling to get into our market. There is no market that I know of, and I am perfectly frank to say I don't think you will find a better market than Baltimore in the United States. I attended a meeting in Milwaukee in November, where a certain group of men had a banquet, and at that banquet men got up and said, "We have got the product, and you have got the market, and we have got to put our products into your market." We tried to tell them that they could only sell in our market the amount that we didn't have, because we were not going to ship to the west. They said, "Yes, but we can produce for less money than you

can, and we can sell it in your market for less money and make a profit.''

There is the key of the whole situation. They can. They'd be delighted to sell their product in our market at less than our price. They'd be delighted to sell Class 1 at less than Class 2 prices. They are offering it for less than our surplus price, much less. Now, what have we got to do? We have got to uphold the Health Department regulations and see that Baltimore is supplied with that quality of milk that the Health Department demands, and see that it is supplied with that quantity of milk that the public demands.

Are we going to do it? We need approximately 5,000-000 gallons more milk to take care of both the fluid milk and the ice cream trade in this market. That means approximately 4 gallons per shipment increased production of Class 2 milk. Don't misunderstand me. We have oceans of milk for fluid milk. We have too much milk, and we find ourselves in this position, that we have either got to go forward or backward. We have got too much milk as it is unless we can get the cream trade, and we haven't got enough milk to supply the cream trade. That is our position today.

It is really more serious than you might think, because if a western producer can ship cream into Baltimore and meet the Health Department requirements, of course, he can ship the milk, because it was a milk requirement before it was made in cream. Therefore, they can start to ship milk into Baltimore at a price that they are producing it for today and offering it on the market, and in that case, how in the world can we hope to maintain our basic price? Therefore, we have got to continue, we have got to endeavor to supply all the market in order to maintain our fluid milk market. And if we take the return of both our fluid milk and cream we are going to average more in price for our product than any market pays for basic milk in any market I know of, comparable to Baltimore, outside of Philadelphia and Washington.

Now, I don't believe this is a big problem. It practically only means one of those good cows I hear people talk-

ing about, or two cows, and it isn't going to increase our cost of production very much, because when we are in the stable we don't know hardly whether we milk one cow more or one cow less, we don't notice any difference when we deliver our milk. All we need is the cow and additional feed, and what we are doing is protecting our basic industry, the thing that we have built up and are proud of, the thing that proves valuable to you, the thing that will keep you continuing on in the dairy business. Just think of it.

Supposing that something would happen and this market was forced to a point where it was not profitable to you. You have got cows that you paid probably a high price for. You'd like to get out. You want to sell. Nobody wants to buy. Did you ever stop to think that the price of milk makes the price of a cow? You are not going to pay a good price for a cow unless the price of milk is good. So there we are, if you tied up the whole industry, and it all comes back to this one story.

Now, men, I have tried to say a lot in just a few minutes. I don't want to crowd the speakers on this program, because they have got subjects that have not been discussed very much, that I think are more important outside of the marketing of milk than anything else. They are of next greatest importance to the dairymen of this state, or any other state.

I would like to take this opportunity to have you ask any questions that you want to. If there is anything that I have said that is not clear, I'd like to clear it up. Are there any questions?

MR. EDGAR PAYNE: Is there already sufficient basic milk?

MR. HEAPS: Yes, we have had since 1922 sufficient milk, and an excess. We have had the highest excess this fall that we have ever had, but that is because we asked for it and arranged for it. We have been trying in the last six months to build up increased production for the cream trade.

MR. O. W. ADAMSON: Mr. Heaps, just how did you arrive at the basic price of milk on the market—still using the fall average, October, November, and December? I understand that has been running for several falls.

MR. HEAPS: We have probably the only market, in fact, it is the only market I know of, where the dealer reports purchases of milk, the basic quantity of milk paid for, the quantity passed through at a certain price, and the sale. We have all that information for the past four years in our office. We take the basic sales as representing the 100 per cent. demand or consumption of fluid milk. Anything over that is Class 2 or surplus, regardless of what the farmer receives for it.

We took 1921-22-23, the fall average of the producers then, because it has come as near as possible to representing 100 per cent. of fluid sales, in fact, it is just 1½ per cent. more than the average fluid sale. We have what we call the Sales Adjustment Department. If the dealer puts into the bottle any surplus milk, he must account in that account for the difference between the surplus price and the basic price. In other words, we charge him in that account with that difference. If he turns into cream, basic milk, then we have to credit him the difference between the surplus and basic price.

For the past few months we have had a surplus of basic milk. Last month we had 43,000 some hundred gallons of basic milk that was made into cream, and we take care of that loss through this adjustment account. I don't know if that clarifies what you have in mind or not.

MR. ADAMSON: Yes, I think so. Would that work on any market?

MR. HEAPS: Yes, I don't see how any market can really operate unless they know the amount of milk the dealer is paying the basic price for and the amount of milk the dealer is selling of fluid milk. Otherwise, he is quite likely to get considerable surplus milk in the bottle for which he pays a considerably lower price. In this market it matters not, the farmer gets the benefit of every gallon of fluid milk that is sold, wholesale and retail.

QUESTION: Do you anticipate any shortage?

MR. HEAPS: I do not see why there should be. Our production this fall is running around 300,000 gallons per month higher than it ever did. We produced in the last 12 months

a little over 2,000,000 gallons more than in 1926, and that, in large part, was done freely, without being asked to do it. It seems to me if we increase 2,000,000 gallons without anybody telling us to do it, we might increase 5,000,000 if somebody asked us to do it.

I don't think that we will do all of that this year. I don't hardly think it is right to expect it, although it is not impossible. If we have as good production this year as last, it might come back. There is quite an increase of production per farm, and we want to remember that in our production per farm we are increasing the earning value of our farm. I don't know of any other commodity that you can produce that has any more of a guarantee than you have in the milk business if we can continue to supply the market as our present demand indicates.

Are there any more questions? If not, I thank you gentlemen for your attention. I am glad to see so many of you here. This is always a hard meeting to get our far away producers out to, but I hope that you men who are here, if you have understood what I have tried to explain, you will take it back home and spread the gospel. (Applause).

MR. PIERCE: How much information do you gather from the postals sent out? How well do the farmers respond to the questionnaires?

MR. HEAPS: I'm glad you brought that up, Mr. Pierce. Along with this present program that we have started, we feel that it is really a duty of the organization to keep the producer informed as to how production is coming on. In other words, we do not want to be a party to bringing about an excess over and above our fluid milk and cream as it is demanded. We don't want you to come back and say, "Well, you told us to increase our production." Well, we are telling you to increase your production, but we want to be in a position if the time comes to tell you to stop. We don't know of any other way to do that than getting accurate information.

We sent out cards to all our members a month ago, asking them to simply fill in that card, giving the number of cows that you had on the farm, the number of milkers,

the number that were dry, the number of hiefers not yet giving milk, and up to date there are about 2,000 return cards. That means that we have got 1,700 or 1,800 cards not returned. That isn't asking much of the farmer. He can do it in two minutes. It doesn't cost him a penny. All he does is take his lead pencil, fill in, and drop it in the mail, and you'd be surprised just what that information means when we can compile it all and see the number of heifers on the farm this year, for instance, as against last year or next year. We can tell fairly accurately just which way we are going. We have seen enough so far so that we are absolutely assured that the farmer is raising heifers.

Two years ago, we sent out the cards, and got back about 1,800 or 2,000, and there were few or no heifers on the farm at that time. Today, we find it is not uncommon to find a man sending his card in with twice as many heifers marked on it as he has got dairy cows. So when we get that altogether and compare next year with this year, we are, I think, going to be able to pretty accurately tell you when to ease up. We don't want you to have a lot of cows on hand coming in that will flood the market over the demand, and we don't know of any other method by which we can keep tab on the production feature better than through that, and I wish you men, if you haven't already sent in your cards, would do so at once. It is quite a lot of trouble to get those cards out and check up and keep those records, and they are really worth while. We want to do it. It is to our interest that it should be done, and if you will coöperate with us in that, I am sure we will all be benefited by it.

PRESIDENT SNADER: I see a crowd of our dairymen came in a little late. I will have to put black marks up for them. They have missed a good story this morning by not being here. I think Mr. Heaps has given us a story that is worth while, and he has shown you how the production has run from 1920 up to the present time, and what you have received for that product under the policy of control

of the last four years over the other way of marketing milk. So much for that part of it.

We have had our story pertaining to the marketing of milk. We now have on our program for the next speaker, Dr. E. M. Pickens, who will go into the diseases of cattle. (Applause).

(Dr. E. M. Pickens presented his prepared address "Contagious Abortion in Cattle.") (Applause.) (Dr. Pickens' paper was subsequently published in the Maryland Farmer and is consequently not included here.

PRESIDENT SNADER: I am sure Dr. Pickens has spent quite a lot of time and thought in preparing a paper of this kind, and I am hoping there can be some way devised so that this paper can get into the hands of each of our producers, because there is no question in my mind from observations over the milk shed, that the farmer's losses from abortion are quite as much as from T. B. Now, the eradication of T. B. has caused quite a loss to our milk producers. We know that. I believe contagious abortion has caused almost as much loss, but we don't know so much about it. It seems that when that gets into the herd a man doesn't say much about it, and I think a paper of this kind is valuable. Dr. Pickens has had the advantage of sitting on a committee that has gone thoroughly into this disease, and a paper of this kind would be quite valuable in the hands of our producers, in order that they might give it some study and to help them clean up where they have this disease in their herds. I want to say, Dr. Pickens, I appreciate a paper like this coming before our dairymen. Are there any questions?

We have next on our program this morning, Dr. Reed, of the University of Maryland. His topic this morning is, "Hemorrhagic Septicemia." I am sure Dr. Reed will bring us a message this morning, and will explain his subject to us in such a way that it will be valuable to us. Dr. Reed. (Applause).

HEMORRHAGIC SEPTICEMIA

By Dr. R. C. Reed, University of Maryland.

Mr. Chairman, and Dairymen of the State of Maryland:

I was first asked to give you a few points in connection with the diseases of beef cattle. When the program came out I found I was to talk to you on hemorrhagic septicemia. In as much as I only got the program yesterday, you can imagine where my speech is. It isn't here. Furthermore, when the Chairman asked how many beef cattle producers were in the room, I didn't see a single hand. (Some came in since).

Anyway, I don't know that it makes a great deal of difference whether we talk about the diseases of beef cattle or of dairy cattle. The subject puzzled me for some time. A cow is a cow, whether she is built along beef lines, or whether she is built along dairy lines, and she has to produce a young animal about once a year, and has to produce milk to support that young animal, not so much as the dairy cow, but physiologically, at least, she is very similar, and the difference anatomically is not so very great.

Consequently, I decided that it would be necessary for me to talk a little bit about the diseases of beef cattle as well as hemorrhagic septicemia, which, by the way, affects both beef and dairy cattle, but perhaps not quite to the same extent in the two types.

In the first place, Mr. Heaps made one remark that it seemed to me was very applicable in connection with my own talk, informal as it will be, and that was that a cow must be kept in good condition to produce milk. I will admit that, and I will admit and add that she must be kept in good physical condition or she will not resist disease. That is the first principle, then, in the reduction of diseased conditions in our live stock, whether they be cattle, or whether they be sheep, swine, chickens, or any other animal in which we are interested and which we depend upon for a certain amount of our livelihood and for the production of food for the people in general.

There are certain diseases that we rather more commonly expect to find in dairy cattle than we expect to find in beef cattle. One of those that could be mentioned, of course, is the so-called milk fever. We expect the heavy producer to be more susceptible to milk fever than the one that is a relatively poor producer of milk. That, then, is one of the diseases that we need not consider in connection with the beef cattle in general.

However, an example that came under my observation a number of years ago—an animal that I knew for several years, a splendid example of the Aberdeen Angus, got the milk fever habit. Whenever that old cow was about to freshen, we polished up the milk fever outfit and prepared for trouble before it got there, and it was always there for us to meet.

Further, we have less of the udder troubles in beef cattle than we have in dairy cattle, so that can perhaps be neglected. Others might be mentioned, but in general, the infectious diseases such as hemorrhagic septicemia, anthrax, black leg, contagious abortion, are all diseases that are common to both types of animals, and must be taken into consideration if we are to keep our herds intact without too great a loss from the ravages of infectious diseases.

Anthrax, a soil-born organism that will affect practically all other warm-blooded animals, is one that is a scourge in certain parts of the country, and when the disease once becomes seated in a locality, it is generally serious, and we can expect on those pastures to treat with some immunizing agent, the herd each year before they are turned out on the pastures. Sometimes even the spores of this organism are carried on the forage, so that we get it from hay as well as directly from the pasture.

Black leg is another example of the soil-borne organism that will affect both beef and dairy cattle and sometimes other species of animals.

I could go on and give you a catalog of the various diseases that animals are susceptible to, but I don't think it would help us a great deal. But I do want to emphasize one point, one that I mentioned in the beginning in con-

nection with these various infectious diseases, and I shall keep on mentioning it through the talk, and that is, keep up the resistance, the vitality of the animal, and you are going to lower your loss from infectious diseases.

Just what does that mean? It doesn't simply mean good food, good water, good shelter. That goes a long ways toward building up the animal and making it resistant. Further, the sanitary precautions that are used today in the matter of bringing in animals help materially in reducing the introduction of these infectious diseases into the herd, and that must be taken into account.

As I said a moment ago, infection once seated in a locality and on the premises is liable to crop up at almost any time. Filthy exercise yards, dirty stables, dirty and undisinfected are natural sources of these serious outbreaks of disease. Occasionally we will even yet see a dairyman who has not a too clean exercise yard. More commonly we see the feeder of beef cattle with an absolutely unspeakable, undescribable exercise yard for his stock. I have seen in a number of cases, inadequate shelter for the animals in the first place, a small, crowded yard simply filled with filth, so that the animal wallowed through mud and manure well saturated with water, practically to his body.

That doesn't give him an opportunity in the first place, for proper exercise. It doesn't give him an opportunity to build up and to gain resistance to disease, and furthermore, those wet, filthy conditions tend to harbor and to hold whatever infection may be carried in them.

I am not going to attempt to try to tell you what the best way of feeding these animals is, to build up their resistance. You know as much about that or more than I do. You know that with properly balanced rations you are going to keep up the vitality as far as the food is concerned.

I have more interest in the sanitary side of the proposition. In the matter of building up resistance to these infections which I have mentioned, the keeping up of the animal's resistance by good living conditions, good food, good surroundings, and when pasture time comes, good pasture is ne-

cessary. Now we come to the building up of resistance force to the diseases by building up conditions that will tend to resist specific disease.

In a great many cases we have definite vaccines, sera, and so on that may be used that will give definite increased resistance to that specific disease. For after all, what is immunity? We speak of immunity; it is nothing in the world but resistance, and so far as we know there is no immunization that is absolute any more than there is any resistance but what can be overcome by certain conditions.

To come down to the subject that was finally put on the program for me to discuss, I want to give a brief history of the disease. It is infectious and highly fatal. It attacks various species of animals. I can hardly think of one that is not affected by some form of this disease. Commonly, we think of it as attacking cattle, swine, and sheep, they being particularly susceptible. Those, perhaps, are the ones that we are most interested in. We do find also, that wild animals are affected with this disease as well as with others, and that frequently outbreaks probably get their source from wild animals. That has appeared to be the case, or did appear to be the case in some of the early histories of the disease.

The greatest losses usually occur in young animals, particularly those that are thin and non-resistant. Low vitality seems to favor the development of the disease. The disease runs a short case ordinarily, anywhere from a few hours to a few days. Frequently the only sign that we will have of anything wrong with the herd is a dead animal found in the pasture, and we wonder what the cause was, and we shall see later, that it sometimes is something of a puzzle at first, at least, for the field man, which one of several different diseases has caused the trouble. Often we find the disease called "stockyard fever." That is one way it seems to get spread, and particularly does it spread, of course, in that way through the beef cattle, particularly the feeders, and those feeders are taken out to farms where there are breeding cattle as well as feeders, and the disease may attack the dairy herd or the breeding herd,

if it be a beef herd, or whether it be for dairy, and cause tremendous losses in that way.

The disease in sheep is rather interesting, and it has been described rather definitely because it has a character rather interesting. The sheep usually dies, by the way, from the acute form, dies within a relatively few hours after becoming infected. In the first place, we have a marked depression. The animal is dopey, just appears sick, weak, no interest in things. It may have at that time a very high temperature, labored breathing, muscular tremor, colicy pain, and if it is an ewe with lambs and is nursing them, we find that the lambs have every evidence of being half starved, constantly pulling at the mother for more milk, showing that even in the sheep the milk production is decidedly low.

We find the disease, by the way, even in birds under various names. The disease was recognized as a definite, specific disease first in Germany in about 1878, and the animals affected in that outbreak were the wild boars and the deer in one of the royal game preserves, and of course, those game preserves were looked after pretty carefully, in fact, more carefully perhaps than some of our domesticated animals. In this outbreak, the onset of the disease was sudden, and death occurred in most cases from 12 hours up to a few days.

A little bit later than that, after the description of this epidemic got out, people began looking around, and they discovered similar conditions in other countries, finding that many others were affected, and that we might find the disease almost anywhere. Finally, we found that practically no country was free from it. The post mortem of these animals, necessarily incomplete at that time, showed little hemorrhages, little breaking of bloodvessels in the tissues, bloody spots. There were swellings, sort of doughy swellings in the tissues in various parts of the body, and on cutting those they were found to be rather watery and bloodstained, sometimes even very highly tinged with blood.

Over the surface of the lungs we find small hemorrhages from the size of a pinpoint or pinhead up to a rather large bloody spot. These spots would not wash out, and consequently, they were under that serous membrane which cov-

ers the lung. Over the intestines we found the same condition, or they did at that time. Hemorrhages were shown to exist in and under the skin. Even the skin took on a dark hue from the outside, showing that the blood vessels were ruptured in and under the skin. Some of the animals showed symptoms of pneumonia. Both the lung cavity and abdominal cavity had a large amount of blood-tinged fluid in them.

That was all noted in the early outbreaks that were studied. As we go on we will find that they didn't miss very much in the way of observation on the gross appearance of the disease.

It was about seven years later, in 1885, I think it was, that the organism causing this disease was first recognized as the cause or believed to be the cause of the disease in cattle, also in swine, I believe, in some of the studies of the disease in Germany. The Germans, you know, are pretty persistent. When they start out to study disease conditions or anything else, they are persistent.

The next year the disease was recognized in Buffalos in Italy, and by a careful study they recognized the organism and the symptoms identifying it as hemmorhagic septicemia. In 1891, Dr. Theobald Smith, I think was the first to definitely recognize the disease and to prove that it was the same, in his case, in swine. In other words, it was the beginning of our study in this country, and the same year, Dr. V. A. Moore, of Cornell (he was not at Cornell at the time, by the way) recognized the disease in cattle.

The cause of this disease is a small, inoffensive-looking organism that needs a good, high-powered microscope to see. It has a peculiar type of staining that makes it rather characteristic, and belongs to a group of organisms that have the same general form and the same general straining reaction, and very nearly the same characters all the way through except that certain members of the group affect certain species of animals, and apparently do not affect others. For example, it has been observed in some cases that serious outbreaks of hemorrhagic septicemia in cattle, hogs running in the same pasture were

unaffected, rather suggesting that the hogs were not susceptible to that particular variety of organism, certainly, not at that time. However, these are actual observations, not by myself, however.

In another instance, a few miles away, they had a serious outbreak of it among the hogs, also running in the pasture with cattle, and the cattle were unaffected. The organism that caused the disease in both cases appeared to be the same. No difference could be observed in the study of the organism.

In 1898, to go back a year or two, there was another outbreak in Germany that in this case affected both cattle and the wild animals, which set the German investigators going again, and they gave us some excellent material on which to base investigations in this country.

In 1901, the disease was recognized in Minnesota. That seems to be the first place where I found it definitely mentioned in this country. There the outbreak was studied very carefully by scientists of the state, and two years later Dr. Reynolds, who by the way is still living and still connected with the University of Minnesota, had occasion to study several outbreaks in the state, and he gave very careful descriptions of those outbreaks, symptoms, post mortem findings, and all details about the outbreak.

The disease seems to appear sporadically, that is, it doesn't seem to sweep the country like some of the other epidemics or infectious diseases. We have to sometimes hunt for the source of the organism. It is very hard to find out why certain outbreaks have occurred. I might state in this connection that the organism has been found in the air passages of apparently perfectly healthy, normal animals. If that is the case, and if the organism is virulent, has its full power for destruction, it is all ready to go to work as soon as the resistance of that animal is lowered. Disease producing organisms have the power, apparently, to take on a greater disease producing ability under certain conditions. In orther words, their virulence seems to increase for a time, so that if the organism gets a start in one animal or two animals, that are a little bit non-resistant, it seems

to give encouragement to the organism, and it proceeds to try out the rest of the herd, and we may, under those conditions, have a serious outbreak. But you will notice with this disease that the unthrifty animals are the ones first destroyed. The thrifty, resisting animals pass through without apparent difficulty, or if they contract the disease are among those who recover.

The mortality, I might say, of the disease is often as high as 80 or 90 per cent. of a herd, but if the animals are in good resistant condition, we may not have such serious losses.

What we know as the incubation period, which is the time between the introduction of the organism and its starting to work, and when the symptoms show, is ordinarily very short, usually only a few hours. In very young animals, young cows especially, we are apt to have the disease in the form of a pneumonia. That is not at all strange. The infection in swine, when we have purely an infection by this organism, is usually a form of pneumonia.

By the way, that organism causes confusion with hog cholera in that it is also present commonly in the air passages and may take on virulence during an outbreak of hog cholera. Sometimes the wrong organism is blamed for causing the trouble.

In general, as we have studied the disease, later on we will have the symptoms in cattle about as follows: This is not complete, but in general it gives a fairly good picture. In the first place, as I have mentioned a moment ago, we may often find an animal dead in the field. That is the first intimation that we have any trouble in the herd. Very little is to be seen while the animal is alive in these acute cases, even when we are observing them very carefully. The time is too short. The animal appears dumpish, sort of sick, and off, and we don't recognize it as anything serious unless we find the dead animal.

If the animal lives long enough, there is a sudden stoppage of the flow of milk. The animal refuses food, or if it does attempt to eat, will frequently chew up the food and then spit it out, due to the fact that the muscular mem-

branes of the mouth and the throat are affected. The throat is swollen, the mouth sore, and it hurts, and they just simply can't swallow. Consequently, the food is rejected, even after partial mastication. Usually they breathe heavily, due to the congestion of the lungs, and probably to the swellings in the throat which interfere with the free passage of air. The animal moves stiffly, may even appear actually lame, and doesn't want to move. It is very loath to move frequently. It is very apt to stand, and stand braced as though it were trying to get an opportunity to get every bit of air it could into its lungs.

In the less acute cases, we find a very rapid falling off in flesh. The animal becomes thin, while, as we often say, we can actually see the flesh falling off the animal. Frequently those animals will go on and possibly eat a little, but eventually they usually succumb within a few days, or at most, a few weeks.

One of the symptoms seen frequently, at least, it is rather profuse—this is not constant, but it is one of the symptoms, especially when the digestive tract is affected—is a profuse dark, foul-smelling diarrhea. The animal is restless usually, nervous, twitchy, but isn't apt to move very much. It may even have spasms and grind its teeth and generally show evidence of a decided discomfort.

Early in the course of the disease, we will find a high body temperature as a rule. Later, that temperature drops, and may become sub-normal, be way below normal temperature. Painful swellings develop around various parts of the body, usually around the throat, neck, shoulders, legs, and may even appear on other parts of the body, again suggesting by the way, other diseases that we will mention later on.

Further, the bowel passages may appear bloody, be decidedly blood-streaked with real, bright, blood. Some have mentioned the fact that the feces may be dark and tarry. That would be due to the breaking down of the blood as it was retained in the intestinal tube. The mucous membranes are congested as well as having the hemorrhages un-

der the serous member, that is, the lining of the intestine swells the outer wall.

The duration of the disease is short. In chronic cases which, by the way, are only apt to last a short time ordinarily—they usually die in the end.

The matter of mistaking this disease for some other, or some other disease for this one: I have mentioned anthrax and black leg. We have seen similarities between these diseases, as well as one other that can be mentioned, malignant edema. In all of these we are liable to have swellings similar to the swellings we see in hemorrhagic septicemia. In the cases of hemorrhagic septicemia, as I mentioned, the bloody discharges are usually rather bright. In anthrax they are likely to be dark. The blood is rather thick and tarry. In black leg we usually find a very acute type of the disease, somewhat similar to the hemorrhagic septicemia, but we find a decidedly localized swelling, and in this swelling, in case of black leg, we usually have the gas formation due to the activities of the specific organism causing the disease, so that when we rub our hands over the skin of the animal over these swellings, we have a peculiar crackling sound somewhat like rubbing your hand over layers of newspapers. Malignant edema is another disease in which we find these swellings, but due to still another organism. I might say anthrax, black leg, and malignant edema are all of them soil-born organisms, while we don't know just where the hemorrhagic septicemia organism comes from.

As to the treatment. It can be dismissed very promptly by saying "There ain't none." There has no such thing been found yet as a treatment for hemorrhagic septicemia. Many have been attempted, but none have been successful. Some were attempted with vaccines, but the animals vaccinated died just as fast as those that were not, that is, in using the living organism, and if anything, in some cases just a little bit faster, so that we had to discard that method. So the only hope we have in connection with this disease is to prevent it in the first place by proper handling and care of the animals, and when the disease does break out, as it will occasionally, use our first principles in taking care

of infectious diseases. Separate the healthy from the diseased animals. In general, let me say that that statement was made advisedly, in that too often we separate the diseased animals from the healthy ones, and leave the healthy ones right where we know the infection exists. The best way is to take the healthy ones away from the diseased ones, and put them away where you at least believe the areas are free from disease.

In the matter of immunization of the animals, there is, perhaps, little to be said. It has been found by actual experiment that the use of the dead organism for vaccination may be used with considerable success in building up a resistance in the animals to the infection. That has been fairly successful, and the losses have been reduced by its use. Stock yard companies have been using it for a time, and they have found definitely that there is a decided decrease in the loss of animals after they have used that, provided the animals are not already infected. It is only valuable in its use on animals that are not already affected by the disease.

Another treatment or method of immunizing, one that is much more expensive, is by using the so-called aggressin. I don't think it is necessary for me to go into details regarding those so-called aggressins. It is a very expensive method of treatment in one way. But when we take into account the fact that the aggressin is made by extracting the juices of the tissues of the animal that has been infected with the disease, we find that it doesn't take a great while to use up a lot of comparatively valuable laboratory material, which must be young animals, or animals of the same species, as the one which we are to protect. As I say, these seem to give a fairly good degree of immunity. We are not entirely satisfied with it yet, but it is far better than nothing, and far better than trying to treat the animals after they have become infected.

Let us keep in mind, however, in the first place, take care of your animals. Keep them under good sanitary conditions, and give them proper food, proper exercise yards,

and always, above all things, plenty of good, pure water. (Applause).

PRESIDENT SNADER: Gentlemen, that concludes our program for the morning. I am mighty thankful to you all that you have been here with us this morning to enjoy the program. Dr. Reed has gone into this subject thoroughly, and some of us who don't know medical terms, why, we just have to stop and wonder about these things. Still, at the same time, these diseases that have been discussed here this morning, are very vital to us people who are producing milk or raising beef cattle, and I am sure at any time that we have a case or that we get in trouble, if we will go to Dr. Reed he can tell us in plain language if we describe our animals, how they complain, some way to help us out of our troubles.

That is what we are here for, gentlemen, in coöperative way, to help each other out of our troubles, because I think we all have them. I am very grateful to Dr. Reed for coming here and discussing this subject with us.

Is there anything further? If not, the meeting is adjourned.

(The meeting adjourned at twelve forty-five o'clock).

REPORT

Nineteenth Annual Meeting

Maryland State Beekeepers' Association

Baltimore, Md., January 5, 1927

REMARKS

BY PRESIDENT L. J. HILGARTNER

As we have a long program tonight, I will not take up much of your time. There are others present who can tell you much more than I can.

However, I would like to say a word with regard to the meetings. Nineteen years ago, when this organization was formed, it had about one hundred members. During 1925, there were forty paid-up members. Up to tonight, there is about half that number paid up. Now, just why should this be? Apparently the interest lags, for when we get a few new members there are others who drop out. Most of those who joined in a wave of enthusiasm when the organization was first formed, have failed to rejoin the Association, though many of them are keeping bees in a small way. Those who are definitely interested in beekeeping from a commercial standpoint, and a few who are interested in bees from the standpoint of the pleasure to be derived from keeping a few colonies, continue their affiliation and are staunch supporters of the Association.

I have been a member of this Association for four years, during which time I have missed only three meetings and have certainly enjoyed being with you. Each one of us should make an endeavor to bring others, and not say as a certain beekeeper told me when I asked him if he belonged to this Association, "Oh, them guys can't learn me anything about bees."

SECRETARY-TREASURER'S REPORT

BY ERNEST N. CORY

During the winter months the Beekeepers' Association followed its usual custom of holding night meetings at the Hotel Rennert. These meetings are always profitable for those who attend, but the attendance is rarely as large as it should be. There was a much better attendance at the summer meetings, starting with the meeting on April 30th, at the Government Laboratory, at Somerset. On this occasion, Dr. Watson, of Alfred College, demonstrated his method of instrumental insemination of queen bees. The opportunity to observe this operation was afforded the beekeepers of Maryland through the courtesy of Mr. Hambleton, in charge of the laboratory. Beekeepers from all parts of the state came to witness the demonstration.

The second summer meeting was held at the home of N. W. James, Baldwin, and it was one of the best attended meetings that we have had for four years. A picture of a portion of the crowd at this meeting is published on page 800 of the December issue of "Gleanings." The third field meeting of the year was held at Somerset, Maryland, October 1st, with an attendance of about twenty-five. A very interesting program was arranged by Mr. Hambleton, and the beekeepers were given an opportunity to see the work of the laboratory.

The situation with regard to foulbrood in the state is beginning to assume proportions that will necessitate the active work of every man in the Association. Thoroughness and promptness in handling the situation will make it possible to keep it well in hand. There are four known centers of infection in the state. An inspector will be trained for work during 1928.

The honey crop has been satisfactory throughout most of the beekeeping sections of the state. Undoubtedly, much nectar is still going to waste for lack of sufficient bees to gather it. Maryland consumes all of the honey it produces and imports large quantities. It seems absurd that this situa-

tion should exist when the beekeeping possibilities are very far from being exhausted.

The county fairs are beginning to recognize beekeeping to a greater extent than heretofore, and some of the exhibits have been quite creditable. The Timonium Fair offers the largest amount of money, and it is hoped that the beekeepers, generally, will make greater efforts to send in exhibits. The premium list for Timonium Fair has been revised with the idea of obtaining larger and better exhibits corresponding with the premiums that are now offered.

THE MARYLAND STATE BEEKEEPERS' ASSOCIATION

FINANCIAL STATEMENT

From January 5, 1927 to January 3, 1928

Expenditures

Date	Check No.	Payee	Purpose	Amount	Deposits
1/24/27	85	E. L. Sechrist.....	Expenses to Baltimore to address beekeepers at annual meeting	$5.82	By balance....$64.63
3/11/27	86	Maryland Farm Bureau.... Federation	Annual dues.....	20.00	
11/28/27	87	American Bee Journal.....	3 two-year subscriptions and 2 one-year subscriptions	4.00	By deposit, Nov. 30, 1927 17.50
11/28/27	88	Gleanings in Bee Culture	1 two-year subscription and 2 one-year subscriptions	2.00	
12/ 1/27	89	American Bee Journal.....	3 one-year..... subscriptions	1.50	
12/ 1/27	90	Gleanings in Bee Culture..	2 one-year..... subscriptions	1.00	By deposit,
12/ 6/27	91	Gleanings in Bee Culture..	2 one-year..... subscriptions	1.00	Jan. 3, 1928.. 19.00
					Total $101.13
			Total Expenditures....	$35.32	..... 35.32
				Balance on hand.....$	65.81

ON THE IMPROVEMENT OF BEE RACES[1]

BY W. W. ALPATOV,
Research Fellow of the International Education Board.

The contemporary development of biology, and its application to domestic animals—zootechnics—shows with perfect clearness, that all the characters of animals, morphological as well as physiological, useful or indifferent from a practical point of view, depend on two factors: (1) hereditary peculiarities of the organism, and (2) the conditions under which the organism develops. The improvement of our domestic animals can therefore proceed in two directions: (1) the breeding of a progeny from the most perfect parents (selection), and (2) an amelioration in the conditions of life (the problem of food and the problem of housing).

Up to the present in the zootechnics of the honey bee, attention has been mainly directed to questions of the second order. In fact, the endless discussions as to the types of hives, and the methods of beekeeping, belong to the second group of measures. The art of selection has been applied to the honeybee only very tentatively, and without sufficent discussion in either practical or scientific literature.

The cause of this lies chiefly in the specific differences which distinguish the honeybee from other domestic animals. Firstly, the queens being fecundated in the air do not allow us to select the males for breeding. Secondly, it is known that in selecting zootechnical qualities great help is obtained from the discovery of such lines as are characterized not only by valuable zootechnical qualities, but also by exterior differences. It is particularly difficult to find such characters for the honeybee, considering its small size as compared with other domestic animals. Only during the last ten years can one observe a certain progress in this respect, and therefore, suppose that the future beekeeper will only make use of bees with the highest qualities.

[1]From the Institute for Biological Research, The Johns Hopkins University. This paper was read before the Maryland Beekeepers' Association January 4, 1928.

In this article I intend to summarize what has been already done in this direction and to outline some new paths for further investigating the question. It must be said that very little has been done concerning this question, even by such an eminent investigator as Prof. E. Zander.

Up to the present the improvement of the bee races has consisted exclusively of importing foreign bees, usually southern ones. Although the import of the Italian bee into Germany has been tried since the sixties of the last century, no scientific comparison between the productiveness of the Italian and the dark northern bee has been made. Therefore, one may fairly ask whether the import of the Italian bees was due to economic considerations or to an amateur's wish to have in his apiary "golden bees" so beautiful in the sunlight. I, myself, think that this is not solely a question of aesthetics.

The mailing of bees and queens from the south to the north, well known to every beekeeper, is usually explained by the following reasons: the working power of the southern bees, where the brood-rearing activity of the queens begins earlier, transported to the north can be very profitable when applied to the gathering of rich nectar; the procuring of queens from the south in early spring is very advantageous for introducing them into hives orphaned during the winter. These are perhaps the considerations that induced Djerzon to encourage the import of the Italian bees into Germany. The testimony of individual apiculturists who are in the habit of importing southern queens, generally shows that the families with foreign queens give more honey than those with the endemic ones. It must be observed that the opinion of single apiculturists are commonly based upon the observations of a small number of imported queens, and cannot be statistically convincing. We know how great is the difference between families of bees belong to the same race. If, nevertheless, we could succeed in showing the greater productivity of the Italian bee as compared with the northern one, proving this by statistical methods, there remains another probable explanation of this fact. The Italian beekeepers furnishing queens to Europe and Amer-

ica during sixty to seventy years have taken them out of the most productive and choice colonies which we have compared with our unselected, local, common queens. In this connection it is worthy of note that Professor Zander, the best apiculturist, both in theory and practice, on the continent, has started a campaign for the improvement and finding of good lines in the dark German bees.

The basis for selection within the limits of the race is the hereogeneity of the population, from the point of view of the qualities to be selected. While beekeepers are very well acquainted with the individual characters of bee colonies, the heterogeneity of such colonies as regards external characters, has been very little studied. In my papers (1-8) I have given many examples of such heterogeneity. Now as an illustration, I will give a series of frequencies and curves of variation of the bee's tongue. The material comes from ten colonies of apiaries of Jaroslawl district (Middle Russia). The tongues have been measured in the laboratory of Professor Schestakoff at the Jaroslawl University, and by his courtesy given over to me to be worked out statistically. They are here published for the first time.

TABLE I

Frequency Distributions of the Tongue Length of Bees Belonging to Ten Colonies of Jaroslawl District

Middle of the classes in mm \ No. of the colony	1	2	3	4	5	6	7	8	9	10	Σ
6.321										2	2
6.278					1				1	3	5
6.235		1				2	1	1	1	7	13
6.192		2	1	2			4	2	8	11	30
6.149	2	2	5	6	3	7	8	2	9	22	66
6.106	4	2	7	5	4	11	13	14	19	17	96
6.063		7	9	10	3	13	9	14	10	16	91
6.020	5	12	19	15	10	13	23	17	11	18	143
5.977	6	11	19	18	13	15	14	17	19	4	136
5.934	23	17	14	20	8	15	9	20	12		138
5.891	33	19	16	16	4	3	9	7	1		108
5.848	9	12	2	4	3	4	8	3	2		47
5.805	7	9	5			5			1		27
5.762	7	1	2	2		2	1				15
5.719	3	2		1	1		1				8
5.676	1			1							2
5.633		1	1								2
5.590		2									2
N	100	100	100	100	50	90	100	97	94	100	931
M	5.900 ± .006	5.928 ± .008	5.974 ± .007	5.976 ± .006	5.991 ± .009	6.000 ± .007	6.610 ± .007	6.007 ± .006	6.047 ± .007	6.116 ± .005	5.995 ± .002
s	0.089	0.115	0.097	0.096	0.094	0.103	0.102	0.081	0.094	0.080	0.112
C%	1.51 ± .07	1.94 ± .09	1.62 ± .08	1.61 ± .08	1.57 ± .10	1.72 ± 09	1.70 ± 08	1.35 ± 07	1.55 ± 08	1.31 ± 06	1.87 ± .03

Table I shows that the arithmetical means of single families differ considerably. The numbers in the vertical column show for each family the number of bees with this or that length of tongue. One can see that the bees of the family No. 1 vary within the limit of 5.65-6.17, and of the family No. 10 5.96-6.34. If we add up the coefficients of variation of all the families and divide it by 10, we shall have an idea of the mean variability of a family. It will be 1.59 whilst the coefficient of variation for all the 931 bees is $1.87 \pm .03$. Hence, expressing the number 1.59 in per cent. of 1.87, we can say that the mean variability of a family is equal to 85 per cent. of the total variability of the apiary. I applied the same method to the bees from different localities. The ratios between the family and the total variation for different apiaries are represented in Table II.

TABLE II

Average Colony Coefficient of Variation Expressed in Percents of the Coefficient of Variation of the Whole Apiary

Apiaries	Per cent.
Apiary of the Kasan Agricultural Experimental Station	70
Apiary of the Moscow Agricultural Experimental Station	95
Apiary of the Tula Agricultural Experimental Station	74
Apiary of the Charkow Agricultural Experimental Station	80

The ratio for the Moscow bees stands apart, showing a great homogeneity in the Moscow apiary. For a whole series of animals such a picture of relation between family and population variability can be shown very clearly.

The works of Pearson, Schmidt and some recent articles published by some of my students (10 and 13) show the existence of family differences in different groups of animals. For the fishes it has been shown by Schmidt (20) that the differences between families have an hereditary

character. The same can be partly seen from the data obtained by Miss T. Dementieva, who has bred the offspring of the single females of *Cyclops* (Entomostraca). Judging by analogy it can be supposed that in the family differences of bees, heredity plays an important part. Of course, one must bear in mind that also, with the bee as with other animals, the conditions of development (temperature, food, size of cells) have certainly an influence on the organism. It is very probable that the index of homogeneity of families in different apiaries, depends in a great measure upon the hereditary relationship of the queens of the apiary. If the apiary contains many swarms obtained by inbreeding in narrow limits, the families will be very much alike and the family variability will be reduced.

The second important question in the problem of selection is to find the relation between the external characters of the bee and this or that quality economically important. The observations of Merrill (16) on this point attracted great attention some years ago. His paper is very valuable as a first effort to solve the problem by means of exact numerical data. The fact is that there seems to exist an indication that there is a connection between the average size of the bee and the length of the tongue on the one side, and the total quantity of honey obtained by the family on the other. But it is not possible to consider this as proved. In order to do so it would have been necessary to take not 4-6 families, as has been done by the author, but at least 50-60 families, and to work out the data thus obtained by methods of mathematical statistics.

Some very interesting conclusions can be drawn from the material published by Mr. Michailov, V. P., Director of the Experimental Farm of the Perm State University. He measured the tongues in 23 families of bees, taking about two hundred individuals from each hive. The families were classified as strong, middling and weak ones. This classification has not, of course, the precision of a qualitative evaluation, but nevertheless it expresses the general impression as to the quantity of bees in the hives, the degree of working activity, etc.

TABLE III

Correlation of the Average Tongue Length of the Colonies and Their Strength

	6.05	6.10	6.15	6.20	6.25	6.30
Strong			4	2	1	
Medium		4	5			
Weak	1	1	5			

Table III shows the relation between the length of the tongue of the bees and the vigor of the family. It can be seen that the numbers contained in the squares ascend almost regularly from the left lower corner to the upper one on the right. Calculating the mean length of the tongue for families of different degrees of vigor, we obtain for the weak 6.154 mm., for the medium 6.153 mm., and 6.203 for the strong. A rule is evident: The stronger the family, the longer the tongue. One can calculate the so-called coefficient of correlation. This coefficient is equal to $0.489 \pm .107$. Simple probability theory indicates that we have 520 chances against one for concluding that the connection obtained is not solely a result of chance.

Applying Fisher's more refined method for testing the significance of an observed correlation in a small number of cases, we have 50 chances against one. We may thus conclude with tolerable certainty that the connection did not arise by chance alone, but has a deeper significance. In discussing the statistical fact which I discovered, it must be strictly kept in mind that we often do not know what is the cause, and what is the effect, in the correlation of two phenomena. In this case we do not know whether the family is strong because the bees constituting it have hereditarily long tongues or whether it is that strong families breed bees with long tongues. Anyhow, the numbers here given are the first in the literature connecting the utilitarian qualities of the bee family—its vigor—with the external characters of the bees constituting the family.

In a recent paper Michailov (17) attempted to apply the correlation theory to the same problem. His calculations were based on data belonging to 30 colonies of the Tula Experimental Station. He did not find any definite correlation between productivity of the colony and the physical characteristics of the bees belonging to the colony. His conclusion is based on a series of partial correlation taking the vigor of the colony as constant. His articles give no information concerning the correlation between tongue length and colony vigor. The latter, as can be seen from Michailov's article, shows a very good correlation with the productivity of the colonies. His data, therefore, do not permit to draw the conclusion that strong colonies have longer tongues. Perhaps the lack of such correlation may be explained by a different variation of colonies in different apiaries. Where the apiary consists of a very homogeneous population the variation is low and the correlation of vigor and tongue length is also not well pronounced.

I have some material which shows that in different strains of the honeybee we find morphological differences of certain organs important from the point of view of a practical beekeeper.

TABLE IV

Number of Egg Tubes in the Right Ovary of Russian and German Queens

Class limits	105.1	115.1	125.1	135.1	145.1	155.1	165.1	175.1	185.1
Russian queens (data from Koshewnikov)	1	1	3	9	7	5	4		
German queens (data from Becker)			1	2	17	17	9	5	

Table IV shows the frequency distribution of the number of egg tubules in the right ovary of the queen. The upper distribution is based on data collected several years ago by Prof. G. A. Koshewnikov (14). The material that was studied by this author was derived mostly from middle

Russia. Beekeepers were asked to send their queens for anatomical investigation. The purpose of the investigation was to study the differences in anatomy between swarm queens and emergency queens. His conclusion was that there is no difference between these two types of queens. We are, therefore, justified in including them in the same frequency distribution. The lower distribution represents material from a paper published in Professor Zander's laboratory (Becker, 1926).

During my residence in Professor Phillip's laboratory at Cornell University, I succeeded in dissecting a few queens, sent through the courtesy of some beekeepers in the United States and Canada. The calculated averages are given in Table V.

TABLE V

Number of Egg Tubes in the Left and Right Sides of the Queen Ovary

	Left	Right	
Queens from Russia	.....	147.10±1.79	Difference 11.92±2.08 R=5.73
Queens from Germany	.....	159.02±1.05	
Italian Queens (U. S. A.)	160.00 N=5	167.00 N=7	
Black bees (Ontario, Canada)	164.2 N=9	162.2 N=9	

It is evident that the German queens reared from stock selected during a period of several years have a larger number of egg tubes than the unimproved Russian queens obtained from ordinary apiaries. (The same can be seen from Fig. 2). The small number of observations on Italian queens does not permit one to derive any definite conclusion, but the impression is that in the United States the queens have a larger number of egg tubes, not only in comparison with the Russian but even with the German queens of the famous stock of black German bees improved by Pro-

fessor Zander. These data open a new way for comparative study of different honeybee races. It would be very interesting to find how selection changes the fundamental functions of the bee—the capacity for honey gathering. Unfortunately, data relating to this question are very scanty. Jüstrich (quoted by Zander) writes that the improved local Swiss race of bees give 9.3 kilo of honey from each hive, against 6 kilo of honey obtained from families taken at random (unselected). (Such a small yield of honey seems very surprising. W. W. A.).

If we pass on to practical conclusions as to the amelioration of bee races, we must say that very few have been reached. Armbruster published in the year 1919, a book especially on this subject under the title *Bienenzuchtungskunde.* It is entirely devoted to the theory of Mendelian heredity. Concerning the bee Mendelism has specific interest in relation to the transmission of hereditary characters by the drones. As we know the drones develop out of unfertilized eggs; so the pure bred queen, fecundated by a drone belonging to another race will produce drones of the same race as herself, without any admixture of foreign blood. In the manual of Zander (*Handbuch für Bienenkunde*) some pages are devoted to the same question. There is also an earlier article by Armbruster printed in the Zeitschrift der angewandten Entomologie under the title "Improve the Bees."

Selection can be carried out in two ways: (1) by the selection of useful characters and (2) by the selection of external characters (first of all according to colour).

For worker bees the following characters are most important: (1) degree of resistance to winter conditions; (2) a strong capacity for honey gathering; (3) the capacity for good comb building; and (4) resistance to diseases. For the queen the principal quality must be regular and vigorous egg-laying.

Selection as regards the colouring, or a racial selection as Armbruster calls it, must be considered from the following point of view. Can it be believed that productivity is correlated with different intensity of colouration? According to Zander, this is not the case. At the same time, it

is well known that in different countries one can observe the predominance of one type of colouring or another. In the south the bees are more yellow than in the north. Admitting that the animal organism is in harmony with its environment, this harmony must be maintained as much as possible. From this point of view, we can perefectly agree with Zander who decided to ameliorate the dark German bee by selection according to colour and to productiveness simultaneous. I think that in a certain way the colouring of the domestic animal can be compared with what in commerce is called the trademark. If we know the manufacturer's mark we can be sure of the contents of a package that bears it. It is the same in bee selection. If a beekeeper who has reared dark and highly productive bees, suddenly notices yellow bees in his apiary, he will conclude at once that strange blood has been introduced through the fecundation of his queens by the drones belonging to another apiary. This alien blood is perhaps not a selected one as regards productivity.

In conclusion, I wish to express the hope and intention to continue work on the same problems in the future with greater precision and detail.

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THE NECESSITY FOR BEES IN ORCHARDS

By B. B. JONES, Carrollton, Md.

Your orator long since discovered that this life offered pleasures which surpassed by far the amassing of a fortune, which one must leave for others to enjoy squandering.

The seeking of pleasures may possibly be considered somewhat selfish, but as each and every act committed through one's own volition is selfish, one should not be condemned too harshly for such pleasures. It is most assuredly much more enobling for one to devote his energies to aiding him who is in trouble than to the amassing of wealth, even though the act be selfish in its nature.

When a youth just entering into manhood, your orator allied himself with an older brother, in seeking the children of a certain neighborhood and corralling them into a Sunday-school. The brother died in 1888 and it then became his privilege to be the inspiring element in the erection of a good and substantial church which is still in service.

Today, he has been given the task of aiding the sick, both among the animate and the inanimate life, and tonight he stands before you possessing a record of having aided many in controlling suffering and other human ailments after regular practitioners had failed to give relief, and he has been the means of bringing into fruitfulness and bearing many fruitless and barren orchards, turning failure and financial loss into success and a source of profit to their owners.

It is the latter subject that I desire to direct your attention tonight—"The Necessity for Honeybees in Orchards." In its issue for December 2, 1927, "The Baltimore Sun" printed a dispatch from the "Emporia Gazette" to the effect that a student ate for breakfast at a drugstore that morning, two candy bars, a bottle of near beer, and a sack of peanuts. "There is no law against it," was his only comeback, and from my experience during the few years just gone, I can surmise that there are many orchardists in the State of Maryland who consider that there is no law

that will compel them to supply their orchards with the services of bees during blossoming time.

Should that student continue to eat such breakfasts, and obtains no more nourishment from his other meals throughout the day than he receives with his breakfasts, I can assure him that before many moons have gone, he will learn that there is a well established and a most positive law against it, a law which he can not violate and get away with it, and the beeless orchardist is most probably already in trouble and is placing the blame for his barren trees every place but the right one.

When I began the keeping of honeybees, twenty-five years and more ago, the beekeeper who supplied me with a start and then undertook to engineer the job of initiating me into the mysteries of the hive, put forth his most earnest endeavors to impress upon me the fact that to harvest a full crop of the best fruit the orchardist must attain an adequate apiary. I could not quite understand why he should have belabored me with such arguments; I did not own or control any orchard and I had just obtained from him more bees than were needed to serve the one or two trees which I did own. It was my opinion that the gentleman should have expended his energies preaching the good word to those who owned orchards that were not supplied with bees. But now I find myself imitating his example and am unloading upon poor helpless beekeepers that which should be planted squarely between the eyes of those who either own an orchard or who anticipate planting one.

Pollination of flowers is not a subject of recent discovery. It was demonstrated some years ago that to enable it to best perform its functions every female flower must obtain for its particular use pollen from a male flower of a different variety of the same species of plants.

In "Gleanings in Bee Culture," February 5, 1894, page 132, Mr. J. E. Crane stated "Many volumes have been published in several different languages upon the fertilization of flowers, the first by Christian Conrad Springer in 1793." This statement is not inconsistent with one previously made by Prof. A. J. Cook, then of the Michigan

State College, when in an article entitled "Bees as Fertilizers" published in "Gleanings" September 15, 1891, page 732, he attributed to Darwin the discovery that plants were fertilized and cross fertilized through the agency of insects.

In his article Prof. Cook explained that to obtain full fruitage, the orchardist must supply his trees, during the period of bloom, with the services of insects and that for this purpose the only insect that could be given any consideration is the honeybee. Prof. Cook also stated that the great mass of farmers were either ignorant or indifferent as to these matters, and although the pages of the bee journals and other agricultural periodicals, since that time have been crowded with information and advice upon the subject, farmers today are equally ignorant and just as indifferent and careless regarding such items as were those of the time of Prof. Cook. In every fruit growing section of this country there are many orchards, both large and small, that are not supplied with any bees and many more that are not properly or sufficiently supplied.

A government bulletin, issued during 1894, entitled "Pollination of Pear Flowers," by M. B. Waite, of the Division of Vegetable Pathology, U. S. Department of Agriculture, expressly admonished fruit growers to "Plant mixed orchards, or at least, avoid planting solid blocks of one variety." Here we find another exemplification of the indifference of farmers. There are today located in Maryland several large apple orchards that were planted some years after that bulletin was issued that are solid blocks of one variety.

During the summer meeting of the Maryland State Horticultural Society, held in the orchards of the Harrison Company, at Berlin, Maryland, in July, 1926, Mr. G. Hale Harrison told a gathering of several hundred fruit growers that his company was operating one orchard that consisted of 20,000 fifteen-year-old Stayman Winesaps, planted in one solid block, and that orchard had never fruited. Mr. Harrison added that when buckets of water were planted with

stems of Grimes Blossoms and hung in any tree during the period of bloom that particular tree yielded fruit, but no fruit set on any of the trees immediately adjoining that one on any of its four sides, demonstrating conclusively that the whole trouble with that orchard was the entire absence of both the pollenators and the means to distribute it. The breezes carried the fertile Grimes pollen throughout the tree in which the bouquet was hung, but could not carry it further, and the sterile Stayman pollen was impotent and unable to perform the task desired of it. Had there been any insects flying in that orchard, the setting of fruit would not have been limited to the one tree, but would have followed every insect that flew within the range of those bouquets.

"Plant mixed orchards" is the admonition of the bulletin, but when planting cantaloupes, cucumbers and similar crops, it is impossible for farmers to heed the admonition, because the sexes can not be distinguished until the blossoms unfold and then most probably both sexes will be found upon the same vine if, indeed, they may not both be in the same flower. The farmer usually plants the seed, depending entirely upon the breezes for his harvest, but it is impossible for any wind that ever blew, or that ever will blow, to carry fertilization to the blossoms of a squash plant, and if the blossoms of such plants open during a period when insects can not fly there will be no crop.

I have supplied bees in greenhouses for the successful pollination of cucumbers, tomatoes, asparagus, etc., which had previously required the services of an attendant to paint each flower as it opened, with a fine camels hair brush, and I have heard farmers complain because a planting of cantaloupes had failed to fruit, although another planting of a few days earlier or a few days later, but which blossomed during a period of time when bees could fly and the flowers were visited freely, produced a bountiful harvest.

Occasions have been quite numerous when, for some imaginery injury committed by the bees to the fruit, they have been excluded from within the confines of certain com-

monwealths only to be given a most cordial invitation to return when it was shown that with the bees went the fruit.

Many notable instances of this character have been chronicled, a conspicuous one being that of the town of Wenham, Massachusetts. We are told that the town board passed an ordinance which forbade the keeping of bees within its limits. While the bees were banished it was noticed that the orchards in the interior of the town gave scarcely any fruit and the little that was given was very imperfect, although all around the borders where bees were kept, fruit set and perfected in the correct manner. After a few seasons of this conclusive proof the ordinance was repealed and the bees were told that they might come back.

About the time the present century was being ushered in, there was in progress quite a spirited controversy between the Bartlett pear growers of California and the beekeepers of that state. The fruit men blamed the bees for the wholesale spreading of fire blight, which at that time was destroying whole orchards almost overnight The bee men admitted that to some extent the accusations were true, but claimed that the bees were responsible for only a very small portion of the damage, when compared to the havoc wrought through other sources.

At one time the argument was replete with threats and incriminations from both sides, the fruit men threatened to poison the bees, and the bee men threatened to retaliate in kind. It was, however, shown that young trees had died which had never blossomed and could not, therefore, have been touched by the bees. It was also shown that were there no bees to cross pollinate the sterile Bartlett blossoms there would be no fruit, and in the end I believe that wiser counsel prevailed; there was no blood shed, events were allowed to shape their own course, and if any lessons in pollination were actually demonstrated I did not hear of it.

For at least half a century dealers in strawberry plants, almost without exception, have cautioned their customers that they must not plant female plants without an occasional row of male or a row of perfect flowering plants, and

so it comes, from all quarters, there is one caution after another that there are well established laws controlling such matters, laws that must be obeyed, but there can be found many instances wherein trees have been planted with absolute disregard for those laws and the owners can not understand why those trees do not yield a harvest.

In this age of civilization and enlightenment, the American public resents dictation, almost everyone is dreaming of that impossible myth "Personal Liberty," each and everyone to do as he pleases, and in the planting of fruit trees, there being no apparent law forbidding it, many times the farmer has followed only his own desires and is now in trouble.

During the fall of 1922, your orator sold the little home, located at Lake Roland, Maryland, which had been his for more than thirty years, and in the spring of 1923 divided his bees among several orchards that were in scattered parts of the State. The venture financially was an absolute failure, but many valuable lessons were taught in the fertilization of fruit blossoms and the work proved to be a most brilliant success; but will the farmer who is now contemplating the planting of fruit trees be guided by the experience, or will he insist upon his personal liberty? Will the orchardist who has already planted but planted in direct violation of laws which were known at the time he planted and who is now caring for and nursing some barren trees, heed advice and supply those trees with some fertile blossoms, together with the services of an adequate number of honeybees, or will he continue to depend upon an alibi?

One of the orchards in which I placed bees belonged to the W. F. Allen Company, and was located close to the town of Salisbury, Maryland. That orchard consisted of sixty acres of twelve-year-old Stayman Winesaps and it had never fruited.

The year 1923 was uneventful except that the W. F. Allen Company began to top work occasional trees with Grimes and to plant missing spaces also with Grimes.

The spring of 1924 found us with thirty hives of honeybees scattered in and around that orchard and surrounding those hives were planted fifty twelve-quart buckets of water that were kept filled with stems of blossoms, cut fresh daily from trees of other varieties of apples and that fall when apples generally were somewhat scarce, that orchard yielded a crop of fruit that averaged from five to eight bushels per tree.

All demonstration work with the blossoms during 1925, was stopped by late spring frosts, but during 1926, there was not only no damaging frost, but the bloom continued over an unusually long period of time, with balmy sunshine during the entire period, and I can most positively assure you that the bees put to some good use the additional time that was allotted to them, and that fall a crop of fruit was harvested from that orchard which averaged from twelve to fifteen bushels per tree, according to my estimate, which in a measure was confirmed in a letter from The Allen Company, dated November 15, 1926, which in part states: "We can say positively that every tree in the orchard this year had a heavy crop."

While the Allen orchard was performing these stunts there were two other large, nearby orchards, both planted in solid blocks of one variety "Stayman Winesaps," that have never fruited. They did not fruit during 1926 when almost every apple tree in the district broke its branches down with an overload.

Both of these orchards are of the same age as the Allen orchard, and both have enjoyed a similar type of soil, climate and cultural conditions, but both have been practically without bees.

For some years there have been conducted, by Dr. E. C. Auchter, the Horticulturist of the University of Maryland, in other orchards belonging to the owners of one of these, two of the most elaborate and most extensive experimental plots that brains can devise, one in peaches, the other in apples, demonstrating the value to the trees of plant foods in various combinations. While this work was in progress, the Great God of the Universe was at work and demonstrated

conclusively that it required something more than plant food to set a crop of fruit on trees which bear only sterile flowers, and in a correspondence with Dr. Auchter upon this subject I received the following:

"Although our self-sterile varieties are properly cultivated, pruned and fertilized, we can expect no fruit unless there are nearby pollinators and bees to carry the pollen; we can not depend upon the winds to carry the pollen from tree to tree."

The query may now be made, "How many bees are required to do a good job of pollinating?" During 1926, when the period of bloom was an extraordinarily long one, a few bees could have done more work than many bees did in 1925, when they were not given more than half a day when they could work, but, ordinarily, there should be at least one colony for each two acres and those 20,000 trees should be supplied with from 150 to 200 colonies and perhaps that will be expensive, but it will be shown that it will be more expensive not to have them.

Plant mixed orchards, cautions the bulletin, but the planting of mixed orchards will not of itself solve the problem of having a crop of fruit set on sterile trees, something else is required, on the other side, all of the bees in the Universe liberated among those 20,000 trees of Stayman apples will not produce a harvest, unless they are properly supplied with an adequate allowance of fertile pollen to carry with them in the flight.

But let us for a few moments consider one or two orchards of the mixed variety in this connection.

In the division of my bees in 1923, an orchard belonging to Mr. William H. Long, at Carrollton, Maryland, received an allotment. This orchard contains many varieties, both sterile and fertile, and most fully represents the class, but in the planting, instead of giving the Paragons "Black Twigs" an inside location, surrounding them with varieties that were fertile, they were placed on the outside and up to and including 1924 had not fruited.

During 1924, several hives of bees were scattered and have since been maintained along that edge, and a few days ago

Mr. Long told me that those trees had fruited each year since.

During October, 1925, a messenger came to me and reported a cluster of bees hanging to a limb in the orchard of Mr. John Houck, at Carrollton. Mr. Houck does a general farming and operates a small tract planted with several varieties of apples. The planting of this tract was mixed, not in any attempt to follow advice, but because the particular varieties best suited his purpose.

Mr. Houck made the same serious mistake that was made by Mr. Long, that although he did mix his varieties, he placed his paragons on the outside instead of giving them an inside location and in 1925 they were sixteen years old and had never fruited.

I am not prepared positively to say that those trees would have yielded a crop had they been surrounded with trees bearing fertile blossoms. I believe that they would, although the improvement would not have been so great as was shown when they were supplied with the services of honeybees. That fall, 1926, those trees produced for their first harvest a crop of fruit that averaged from fifteen to eighteen bushels per tree.

The swarm of bees was hived on empty combs in an eight-frame, single wall hive, they were placed under the lee of a strip of woodland, with no other protection, and Mr. Houck was given instructions for their care. That colony of bees, hived on empty combs during October, in an eight-frame, single wall hive, with no other protection than a strip of woodland, came through a long, hard winter into April with a full house.

A second story was placed on it during the apple bloom. A third story was given during early June, and a fourth during late June, making in all, four stories, each being a full depth body and contained Hoffman frames each with a half sheet of foundation.

After the honey flow, divisions were made, simply by inserting a bottom board between each two bodies, making a top for the hive below it and a bottom for the hive above it. The three portions proceeded to raise queens, and when

winter came there were four thrifty colonies of bees in the stack, each with a laying queen.

Mr. Crocker has told you how to make a start with bees, and his remarks apply very nicely to him who desires to harvest a crop of honey either for pleasure or for profit. They might just as well apply to the orchardist if he will follow directions, but the orchardist is busy with his orchard and has no time to bother with bees, he is generally afraid of them and were he not compelled to have them would not tolerate them on his place. How then, shall such an one obtain the services of the bee to pollinate the blossoms of his trees?

I recently visited an orchard in which no bees were kept. The owner depended upon the wild bees and those kept by his neighbors, and convinced himself that there were sufficient bees in the orchard during the bloom to do a first-class job, but I would enjoy the privilege of placing just one hive of bees under one of those trees for just one season and have Mr. Orchardist watch that one tree.

Another plan to adopt is to buy bees and install them in the orchard, then let them alone and replace the winter losses with fresh purchases in the spring, but someone claims that such a procedure is expensive, probably it is, but let us put a little simple arithmetic into those 20,000 Stayman trees that have been barren for sixteen years.

If each of those 20,000 trees yielded five bushels. The Allen Orchard produced more than this in 1924, a bad year for apples, and they gave more than twice that in 1926. The harvest would have been one hundred thousand bushels at twenty-five cents per bushel; the product would have totaled $25,000, from which only the cost of harvesting, marketing and the packages should be deducted. The cost of the land, of the trees, of planting them, of cultivating, fertilizing, pruning, spraying, taxes, have all been paid and there is no crop; and if the bees are given full credit there will be sufficient funds to pay a competent beekeeper to devote his whole time to the work and a nice little sum left over for some other expenses. Would it not be a wise proposition to give the bees at least a chance?

January 4, 1928.

CHROMA-VISION IN THE HONEYBEE

BY L. M. BERTHOLF, The Johns Hopkins University.*

The problem as to whether the colors of flowers facilitate the visits of insects is an old one, but one in which an active interest has been retained by students of nature, both professional and lay, for over 200 years. The interest arose, probably, in the discovery by Kölreuther (1761) that insects are necessary for the pollination of many flowers and the formulation by Sprengel (1793) of the theory that, since it is predominately the bright-colored flowers which depend on insects for pollination, therefore, the insects recognizes and are attracted by bright colors.

This theory has not gone unchallenged, however, Bonnier (1878-1909) and Plateau (1895-1907) in France and v. Hess (1913-1920) in Germany, being its main opponents. These men maintained that color is of relatively small importance in the attraction of insects to flowers, that on the contrary odor is much more important. On the other hand, many other workers, such as Lubbock (1881-88), Forel (1878-1910), v. Frisch (1914), and Knoll (1913-26) in Europe and Lovell (1909-12) in this country, to mention only a few have made observations and experiments which convince them that the theory is sound, that the colors of flowers are indeed of significance in attracting insects. On the whole, the evidence seems to me to be predominately in favor of the theory, although it should be remembered that it is still a theory.

Perhaps that is as far as the interest of the beekeeper will go in this matter. But I should like to point out to you some questions which grow out of this problem which have proved extremely interesting, at least from a theoretical point of view, and which indeed, are not without the possibility of some practical application.

*The experimental work mentioned here was done at the Bee Culture Laboratory, U. S. Department of Agriculture.

The first fact to be noted is that the word *color,* as we employ it, is used in two different senses: sometimes we mean by color only spectral colors, that is, red, yellow, green, blue, and combinations of these, as when we distinguish "colored" objects from "gray" objects; at other times we include white and black and the grays among the colors, as when we speak of the color of a house. It is in this latter sense also that we usually employ the word when speaking of the color of flowers. That is to say, the concept *color* involves a qualitative factor which we may call *chroma,* and a quantitative factor which we may call *brilliance.* Now, therefore, the question arises: Do bees differentiate flowers on the basis of chroma, or only on the basis of brilliance, i. e., only as an ordinary photographic plate does, merely as different shades of gray?

This question was first seriously tested by a German worker, v. Frish, in 1914. His experiments consisted in testing whether bees can differentiate a paper of a given chroma from every one of a series of gray papers of many shades, reasoning that if they are chroma-blind, like a photographic plate, a given chroma will appear to them indistinguishable from some one of the grays, and they will thus confuse it with one or more of the grays. For grays he used a series of fifteen to thirty-one gray paper sheets about six inches square, all of different shade, ranging in brightness in approximately equal steps (for the human eye) from white to black. These he arranged checker-board fashion in irregular order and among them he placed a sheet of pigment-paper, yellow for example. On each of the grays he placed an empty watch-glass, on the yellow, however, a watch glass filled with sugar-water, and accustomed the bees to come thus to the yellow for food. The position of this yellow and its watch-glass was ferquently changed to avoid training to a particular location. After a suitable training period of a day or so, he replaced the yellow and its watch-glass with a fresh sheet of yellow and a clean empty watch-glass, in order to see if the bees could select this yellow from among the grays, as indicated by whether or not they flocked around it seeking food. He found that they did indeed

flock around it almost exclusively, leaving the grays largely unnoticed. In answer to the criticism that the bees had perhaps been enabled to select the yellow because of its odor, he placed a glass plate over the entire arrangement, and got the same result.

It appears than that the yellow was different to the bees from any gray used. But the objection arises; Perhaps there were not enough grays; perhaps no one of the grays corresponded exactly to the yellow in brilliance, so that after all it was only a case of differentiating differences in brilliance. v. Frisch answers this objection, at least in part, by a modification of his experiment. Instead of training to the yellow paper he replaced it with a given gray and attempted to train bees to select this gray from all the others. In this attempt there was no success. When the sugar-water was taken away, the bees did not flock to the shade of gray used in training but came rather indiscriminately to all the grays. v. Frisch reasons that if in the first experiment the difference between the yellow and the grays had been only a difference in brilliance, the first experiment would have failed like the second. That the yellow may have been more brilliant, because of its ultra-violet content, than any of the grays used, he seems not to have considered at all. However, in the cases where he used a plate of glass to cover his papers, any ultra-violet radiation present was largely absorbed by the glass and hence, in all probability, this point is not a serious objection. v. Frisch concluded from his results that bees can differentiate colors on the basis of chroma alone, but not at all, or at least to only a slight extent, on the basis of brilliance alone. In other words, according to this conclusion, they are just opposite of an ordinary photographic plate in this respect, the plate being sensitive to brilliance and not to chroma, the bee being sensitive to chroma but not to brilliance.

Now, while the presence of chroma-vision in bees was not surprising, the absence, or near absence, of brightness-vision seemed strange, since the latter has been regarded as the more primitive form of vision. Similar results have been

obtained by others, however, using the same or similar methods, one of the latest papers being one by Kühn, published only last summer.

But the method just described seemed to me inadequate to test the matter of brightness-vision. As a matter of fact, it was not designed primarily for that purpose, being used rather merely as a check to the experiment on chroma-vision. It appears to me self-evident that different intensities of light stimulate bees to a different extent. And yet in v. Frisch's experiments the bees did not give any evidence of this by selecting one gray from another, except that after being trained to white or black, they tended to select the lighter or darker grays respectively. Now it occurred to me that an explanation of this poor selection lies perhaps in the fact that so many grays were used at a time. Even a human being would doubtless have difficulty in selecting any particular shade of gray from among thirty, or even fifteen, others, after they had been shuffled about. The way we arrive at a conclusion regarding our own ability to differentiate grays is to test only two at a time.

Accordingly, I constructed an apparatus in which two beams of white light of different intensities were allowed to cross at right angles in a dark box. (Different intensities of white mean different shades of gray, of course.) Bees were then trained to associate one of the beams with food and after a suitable training period, tests showed whether on not they were able to select the one intensity from the other. I used intensities that stood in the following rations: 1:1.3, 1:4, 1:7.5-8.0, 1:9, 1:10, 1:25, and finally complete darkness: bright light. The results of my tests showed unmistakable selection in all these pairs of intensities, except perhaps the first (1:1.3). Since the difference in brilliance between the members of the first pair was hardly noticeable even to my eyes, the conclusion seems to me justified that bees not only have a brightness-sense but that it is fairly acute.

We can say then, by way of summarizing these general conclusions, that bees can differentiate colors, and moreover can do so on the basis of both brilliance and chroma.

In ability to differentiate steps of brightness they are not greatly inferior to humans; how do they compare to humans in ability to differentiate differences in chroma? How many, and which ones, of our chromas can bees differentiate?

It may be well to digress slightly at this point to remind you of some facts regarding the spectrum. For humans, the spectrum extends from what we call the deep red, which is produced by relatively long light waves of about 700 millimicrons (.0007mm.) in length, through orange, yellow, green, and blue, to deep violet which is produced by light waves of about 400 millimicrons in length. Beyond this, of course, is the invisible ultraviolet, produced by even shorter light waves.) It is this series of chromas which we see always in a rainbow. Under suitable conditions the normal human can differentiate well over 100 different chromas in this series. The question is, how many can the bee differentiate?

This question has been investigated mainly by the German investigators v. Frisch (1913-14) and Kühn (1921-27). v. Frisch concluded from the results of his experiments that bees differentiate only two regions of our spectrum, the region including our orange, yellow, and green, and the region including our blue and violet. Within these regions, according to v. Frisch, the chromas are indistinguishable. In other words, if we dare interpret bees' sensations in terms of our own, they see, according to v. Frisch, a sort of yellowish green chroma at one end of the spectrum and a bluish violet at the other, the red being indistinguishable to them from the black and the blue-green from certain grays.

But Kühn, in investigating the matter further, using pure spectral light, found that they do differentiate blue-green from grays and from the other chromas, and that in addition they differentiate an ultraviolet region which is almost entirely invisible to us! That is, he maintains that there are four separate chromas in the bees' spectrum, one in the yellowish green, one in the blue-green, one in the bluish violet, and one in the ultraviolet.

But it seemed to me possible that by use of a slightly different method than v. Frisch and Kühn used, the pres-

ence of still other chromas in the bees' spectrum might be demonstrated. One may briefly state the essentials of v. Frisch's and Kühn's method as follows: Bees were first accustomed to come for food to a given chroma which was exposed without the presence of any other chroma. Then, as a test, there was exposed simultaneously with this training chroma, a series of from four to fifteen other chromas, all without food, and note was taken as to whether or not the bees selected out their training chroma from the others. The result was that usually they did, but not precisely. That is, if trained to blue they came in the tests to all blues and violets exposed; if trained to yellow they came to the orange, yellow, and green chromas, etc. Now I wondered if by using pairs of closely related chromas in my "training box", already mentioned, evidence might not be obtained for still finer discriminations. Accordingly, I crossed in my dark box beams of light of diverse chroma (produced by use of Corning glass filters) and trained bees to associate one of these with food, as already described. I found that here, where they had a chance to compare the two beams each time they entered the box, they did distinguish blue from violet, and also green from light red, even when these chromas were made quantitatively equal (i. e., equal in brilliance) for the bees. These experiments are as yet only in a preliminary stage but they do indicate strongly that bees can differentiate more than four chromas, probably at least six.

Another very interesting discovery has recently been made concerning the bee's chroma-vision, namely, that there are complimentary colors in the bee's vision! In our own vision, as you know, certain pairs of chromas if mixed together in correct proportions will produce the sensation of gray. In the event of a contrast between one of these and gray, the other complimentary sensation is produced. For example, if we place a small piece of gray paper on a yellow background the gray paper assumes a bluish tint. Now Kühn (1927) has shown that this is true also for bees. Bees were trained to come to a blue paper for food. Then the blue was removed and in its place was set out an arrangement consisting of a number of grays and different chromas and

also of a gray on a yellow background. When the bees returned to this arrangement, they settled on the gray which was placed on the yellow background and left all the others unobserved, indicating that this contrast gave them about the same quality of stimulation that the blue alone gave.

To again summarize, we may, I believe, draw the following conclusions:

1. Bees differentiate colors on the basis of both brilliance and chroma;
2. They differentiate qualitatively at least five of the spectral colors visible to us, possibly more;
3. They also differentiate at least one ultraviolet chroma;
4. Their spectrum extends deeper into the ultraviolet but not as far into the red as our own;
5. There is at least one pair of complimentary colors for bees.

Now what is there in all this that has any application to practical beekeeping? It seems to me to be valuable mainly in accordance with the aphorism that any additional knowledge of the creatures with which we are working is of benefit, if only in the additional confidence it gives us in working with them; they loose just that much of their mystery and their behavior becomes just so much the more a matter of our control. For example, a knowledge of the bees' color-vision enabled v. Frisch, in experiments which he conducted, to deceive the bees completely as to the location of their hive. He covered the front of an inhabited hive with blue, and that of a neighboring empty hive with yellow cardboard. After the bees had become trained to the blue, a reversal of the cardboards sent all the home-coming field bees scurrying into the empty hive. Then, too, the knowledge that bees are relatively blind to red (not totally blind, however, to an ordinary ruby lamp) has led for a long time to the practice of using red light to examine bees in winter cellars and at night.

Many of the questions touched on here are only in their preliminary stages of investigation but they open up a vast field of research, the outcome of which, and the effect of which on practical beekeeping, only time can tell.

REPORT

OF

Tenth Annual Meeting

OF THE

Maryland Vegetable Growers' Association

FIRST SESSION

January 4, 1928

REPORT

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Maryland Vegetable Growers' Association

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January 4, 1928

President J. E. Patten opened the first session of the Annual Meetings at the Hotel Rennert, Baltimore, Maryland, with a few appropriate remarks. He then called for the report of the Secretary-Treasurer which was read and adopted.

REPORT OF THE SECRETARY-TREASURER

W. R. BALLARD, College Park, Maryland.

The season of 1927 has been favorable for the production of vegetables in Maryland and with a few exceptions financial returns have been satisfactory. The pea crop was unusually good, and a satisfactory pack was secured by the canners. Potatoes, tomatoes, cabbage, asparagus, beans, and cantaloupes were up to the average or above. Sweet potatoes yielded well, but the returns were generally unsatisfactory. As an exception to the rule, sweet corn was generally below par.

With the recent improved methods of insect control, growers have been able to keep ahead of the game, but now that the Mexican bean beetle is spreading over the state and the distribution of the Japanese beetle and European corn borer are imminent, it behooves the vegetable growers to keep abreast with the work the scientists are doing toward working out methods for their control.

The monthly Vegetable Growers' News Letter has gone out monthly to the members of the Association with the exception of those for August and November. In the first case the Secretary was out of the State on a vacation and in the latter the press of other official duties prevented its issue.

The accounts of the Treasurer are in shape and ready for inspection by the Auditing Committee. The books show a balance in the Treasury of $18.80.

THE GROWING AND MARKETING OF CANTALOUPES

By C. H. Nissley,
Extension Specialist in Vegetable Growing,
New Brunswick, N. J.

The growing and marketing of muskmelons has in the past decade developed into an important industry. We in the East had the two large Eastern markets more or less to ourselves, but with the improved transportation facilities, outside and distant competition has increased very rapidly, and now we find this competition has forced the Eastern grower either to produce better melons more efficiently or to go out of business altogether.

In 1927, eighteen states and three countries, namely Mexico, Chili, and the Argentine, shipped on the New York market over 7,454 carloads of melons. Philadelphia also received melons from these sources, however, in less amounts.

As for the growing of melons, I am familiar only with New Jersey conditions and practices, so I will confine my remarks accordingly.

The varieties most common in New Jersey are the Early Knight, Fordhook, Jenny Lind and Hearts of Gold. This past year a few growers tried out Hales Best and Honey Ball and received very encouraging results. The Honey Ball seemed to be resistant to the leaf spot or blight, and the melons sold well on the Atlantic City and other shore markets.

Our varieties are gradually being reduced and are coinciding with the varieties shipped in from distant markets.

I do not know whether or not this is a good trend, should the local melons be of distinct varieties so as to distinguish them from foreign melons or should they be of the same variety? In some cases the sales would be increased while on the other hand it would be a great hindrance. Quality, and quality only of the melons marketed will determine this factor.

Good seed of known origin and true to type and variety is difficult to obtain. Most of our best melon growers save their own supply of seed when possible. These melons are selected early in the season when the vitality of the plant is good and while quality is good. When seed is purchased the larger growers buy direct if possible, from the originator, while the majority of the miscellaneous growers will buy seed from the cheapest possible source, which of course, is in accord with their system of farming and their success.

Treating the seed before planting has become a general practice. Bayer Dip Dust or Semesan Bell are the materials used. No striking results have been noticed so far between the treated and untreated seed. However, we believe it a good practice with all seeds capable of carrying disease on the outer seed coat.

The starting of melons in Veneer Bands under glass has become quite popular, and new structures are being erected every year for this purpose.

For three seasons the vegetable department of the New Jersey Agricultural Experiment Station has conducted experiments to show the value of starting muskmelon plants under glass and then transplating them to the field. The idea is not new, but it has never been put into commercial practice in New Jersey.

Earliness Results

The difference between the transplated plants and those developed from seed planted directly in the field is striking. If the transplanted plants are well grown and handled, the vines will meet across the rows before the plants from field sown seed have scarcely started to "run". The first pickings of ripe melons of the Early Knight variety were

made from transplanted plants at New Brunswick on August 3, in both 1922 and 1923, whereas the plants from field sown seed failed to mature any melons until August 17 in 1922, and August 18 in 1923. This is a gain in maturity of two full weeks.

Increases Yields

Earliness, however, did not prove to be the only advantage gained from transplanted plants. They also produce an increase in yield of approximately forty five-eight bushel baskets per acre, or about 450 melons. This result may possibly be explained by the fact that the transplanted plants become vigorous and well established during the favorable growing weather of early summer and before the attacks of melon blight become serious.

Wooden Bands Best

In 1922, wooden veneer bands were used and in 1923 both wooden veneer and paper bands 4 x 4 x 3 inches and 4 x 4 x 4 inches were used. The paper bands produced just as good plants as the wood veneer bands, but they are more expensive, harder to keep in shape while filling with soil, and more apt to rot away before transplanting time, thus making the plants difficult to handle when removing them from the plant bed.

Avoid Too Early Planting

The bands are placed side by side in a hotbed, cold-frame, or greenhouse bench. A thin layer of compost is put in the bottom of the bands. They are then filled level full with a well prepared garden soil that will not bake hard. The soil is firmed slightly and the seed sown, allowing six or eight seeds to the hill. The seed should be sown about April 15, or three to four weeks before field planting time. If planted too far in advance of field setting, the plants will become crowded and soft and receive a check which will offset the advantage gained by this method.

After the seed is sown the details which will require the most attention are watering, ventilating and weeding. A

day temperature of 70 to 75 degrees should be maintained until the seeds germinate. After that the day temperature should be kept at 60 to 65 degrees, and the night temperature at 60 degrees until about a week before transplanting time, when more air should be given in order to "harden" the plants.

As soon as the little plants show the center bud thin them to three plants per band, and when you are certain of a good stand thin to two plants for field setting. Sometimes the third plant is left for removal after the plants have been set in the field; if this is done do the thinning with a knife, as pulling will disturb the roots of the other plants.

As for insects, the two most important insects are the striped cucumber beetle and the aphis. In the past we have been recommending the nicotine dust for control of both insects, however, this year, for the beetle control, the Japanese beetle spray, (Pyrethrum, Soap Spray) secured from McCormick & Co., Inc., Baltimore, Md., will be recommended. Last year Dr. Headlee secured 100 percent kill of all beetles with no injurious effects on the tender plant. The old formulae of gypsum to which has been added a small quantity of turpentine or kerosine, will also act as a repellant. Lime is not used extensively as there is a burning effect on the young and tender leaves. For aphis, the nicotine dust is generally used.

We cannot mature a crop of melons in New Jersey unless we spray with Bordeaux Mixture to control the blight or angular leaf spot. Quality melons are important and every grower realizes that when the vitality of the plant goes down the quality of the melon goes with it, and with the same rapidity.

Many of our growers are planting in 5 and 6 foot rows. Six foot rows are preferred when spraying with the potato sprayer, three rows being sprayed at one time. When the plants are young, one nozzle is used to the row, and as the vines spread, two nozzles are used and spread so that the spray cones meet about 6 inches above the plants. The nozzles are also slanted back so that the forward cone of the spray is straight down and the back part of the cone

at quite an angle. In spraying with 200 lbs. pressure with nozzles set properly, a good coating of spray is placed on both surfaces of the leaf.

A homemade Bordeaux mixture is recommended, using 3 lbs. of copper sulphate, 4 lbs. of lump lime or 5 lbs. bag lime to 50 gallons of water. Many brands of commercial prepared Bordeaux were tried out but none of them will give the results secured by the homemade materials. Approximately 65 to 75 gallons of material are necessary to spray an acre of mature melon plants.

Fertilizers used are many and varied. The fertilizer, however, which gave the best results over a period of years experimentally, was the one used by successful melon growers in Burlington County. Outstanding results were secured where a green cover crop of rye was substituted for the stable manure and reinforced with commercial fertilizers. The treatment consists of rye turned under in the spring, a mixture of 450 lbs. of acid phosphate and 150 lbs. of muriate of potash broadcast and harrowed in, then 250 lbs. of high-grade tankage applied under the hills when they are made up. After the vines have run about 12 inches, a side dressing of 100 lbs. of nitrate of soda and 100 lbs. of fish or tankage mixed together is applied on both sides of the rows and cultivated in.

The total gains in favor of stable manure reinforced with acid phosphate and with a 4-8-4 mixture as compared with the manure only, are hardly large enough to warrant using the extra fertilizer. The increase in yield of the green manure reinforced with fertilizers over a 3-year period on the veneer band plots was 103.9 baskets per acre and on the field planted plots the increase was 52.4 baskets per acre over the manure alone. The increase in yields over the other plots is about the same as over the manure alone. The results indicate that under the conditions where these experiments were conducted green manure can be successfully substituted for stable manure and an organic source of nitrogen should be used in combination with a mineral source.

MUSKMELON FERTILIZER RECORDS

	1926		1925		1924		1923		Average 4 years		—1923 Average No. per Acre		
	1sts	2nds	1sts	2nds	1sts	2nds	1sts	2nds	1sts	2nds	1sts	2nds	3rds
Manure alone (v. b.)	269	144	131	130	163	130	280	152	210	139	3360	2440	2000
Manure alone (f. p.)	130	80	106	83	62	115	240	122	135	100	2880	1960	1840
Manure and 500 lbs A. P., (v. b.)	258	167	93	101	155	127	310	160	204	139	3720	2560	1880
Manure and 500 lbs. A. P., (f. p.)	153	104	101	62	75	181	280	145	152	123	3560	2320	1800
Manure and 500 lbs. 4-8-4 (v. b.)	222	89	115	128	113	162	290	137	185	129	3480	2200	1600
Manure and 500 lbs. 4-8-4 (f. p.)	94	58	65	53	83	153	213	162	114	107	2560	2600	1880
Manure, 500 lbs. 4-8-4 (v. b.) 150 lbs. NaNo 3 side dressing	169.5	93	95	125	109	154	327	163	183	134	4280	2680	1440
Manure, 500 lbs. 4-8-4 (f. p.) 150 lbs. NaNo 3 side dressing	106	72	80	42	61	100	336	115	146	82	4040	1840	1400
Rye and 150 lbs. KC1, 450 A.P. (v.b.) 250 tankage under hills, 100 lbs. NaNo3, 100 lbs. fish	216	150	156	113	191	143	426	179	247	146	5120	2840	1360
Rye and 150 lbs. KC1, 450 A.P., (f.p.) 250 tankage under hills, 100 lbs. NaNo3, 100 lbs. fish	33	47	80	58	88	132	386	147	147	96	4640	2360	2360

Veneer bands—v. b.
Field planting—f. p.

12 melons—1 basket firsts
16 melons—1 basket seconds

Figures indicate number of ⅝ baskets per acre

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When it comes to marketing, quality is the outstanding factor. Variety, size and general looks are also factors. We are so located near to the best markets, that it would be folly to say that distant markets cannot compete when nearby produce is being produced. But the fact remains that we have strong competition from Arizona, California and Colorado, during August and September, when our melons are being marketed. The handling and distribution costs for shipped melons are the same, the only difference is in the cost of freight or express, and that difference is not great. A study made by the Joint Council of the National League of Commission Merchants of the United States, et al., on perishable fruits and vegetables included melons for 4 years, and found the distribution as follows:

Product	Cars	From	To	Shipper	Freight	Wholesalers Gross Profit	Miscellaneous Costs
				%	%	%	%
Cantaloupes							
1919	2212	Cal.	N. Y. C.	45.83	37.9	6.66	9.61
		Av. haul 2800 mi.					
1920	1823	Cal.	N. Y. C.	47.80	36.6	5.99	9.61
		Freight rate increased August 26, 1920					
1921	1825	Cal.	N. Y. C.	37.79	46.31	6.28	9.61
1922	431	Cal.	N. Y. C.	41.49	41.66	7.24	9.61

The truck movement from the Tri States must also be considered, because the greater percentage of melons are trucked directly into both Philadelphia and New York. This means of transportation will help materially in reducing the handling charges which are so great on shipped produce.

The roadside market well located is the most satisfactory method of marketing *good quality* melons. A satisfied customer will return for more, and give you free advertising among his or her friends, but the *quality must be good.* Roadside markets, however can handle only a certain acreage, surplus melons will necessarily have to be wholesaled.

There is no difficulty experienced in the marketing of good quality melons. Spraying for disease, control and fertilizing for vigor and vitality in the plant will give quality. Every grower should strive for quality and give the buying public just that much more confidence in his product. If we grow quality melons in the tri-state territory, we need not fear from all of the outside competition, because we can pick and market our melons when fairly ripe, and when they are in the prime for eating. The proof is in the eating, with the money and satisfaction with the producer.

CONTROL OF CUCUMBER AND CANTALOUPE DISEASES IN MARYLAND

W. W. GILBERT,
Pathologist, Bureau of Plant Industry, U. S. D. A.

The damage due to diseases is often much more severe than is appreciated by the farmer. In addition to the evident and readily seen loss resulting from marked reduction of the yield or size of melons due to disease, is the less easily seen, but nevertheless very real loss, especially to cantaloupes, due to reduction in quality of the melons which may reach marketable size before the disease kills the plants. If these inferior melons are marketed, the result is a low return and a host of dissatisfied customers who will in the future look elsewhere for their melons or do without.

Some of the diseases of cantaloupes and cucumbers which occur in Maryland have been present rather generally for many years, while others are relatively recent in their appearance.

Most of them are caused by bacteria or fungi which attack some part of the plant. For certain diseases well recognized methods of control are available though in many cases they have not come into general use. In other instances, entirely satisfactory control measures have not yet been developed, and in still other cases, especially of relatively new troubles, the necessary facts of the life history of the casual organisms have yet to be worked out and more research is needed to obtain methods of control.

Bacteria Wilt

One of the first diseases to be noted when the cucumber and melon plants are still quite small is commonly called "wilt" or bacterial wilt. Affected plants when small usually wilt suddenly and completely and die within a short time. This wilting must be distinguished from that due to the larvae of the striped beetle burrowing into the stems of the young plants and causing them to wilt and die slowly. When older plants are attacked by wilt they may die more slowly, runner by runner, depending on the part of the plant where infection took place. This disease is caused by germs or bacteria (*Bacillus tracheiphilus*) which generally enters the leaves through wounds made by the striped beetles (Slide 4), and grow into and clog the water vessles of the stem and roots, preventing the rise of moisture from the soil and resulting in the wilting of the plants. It has now been thoroughly established that the causal organism of the wilt disease does not live over winter in the soil nor in the vines of diseased plants, but, much as the germs of malaria live in the malarial mosquito, so the germs of the wilt disease are carried over winter in the bodies of the striped and 12-spotted beetles which are such common pests on most vine crops. These insects are likewise largely if not entirely responsible for the spread of the disease in the field. With these facts in mind it is clear that a serious prevalence of wilt is correlated with an abundance of beetles. Likewise, an abundance of beetles generally means that wilt will be plentiful.

In seasons of heavy beetle occurrence, wilt often causes serious damage by reducing the stand and hence the yield of fruit. The best methods of wilt control include pulling and burning or burying the wilted plants as soon as they appear, thus removing the sources of infection and spraying with 4-4-50 Bordeaux Mixture and lead arsenate (4 lbs.) or dusting with nicotine dust or with gypsum and calcium arsenate (1-20) to control insects.

Leaf Spots

There is then a group of leaf spot troubles, all caused by bacteria or fungi whose first and most conspicuous symptom is a spotting of the leaves. They are commonly known as anthracnose, blight, angular leaf spot, and downy mildew.

1. *"Anthracnose"* is due to a fungus (*Colletotrichum lagenarium*) which causes irregular, roundish spots of a light brown color on the leaves, ¼ to ½ inch in diameter, the largest of the four leaf spots. In the early stages on both cantaloupes and cucumbers the spots are small and watersoaked; later the centers may become dry and lighter with dark margins. On the stems elongated sunken lesions are formed, which at first have a dry and chalky appearance, later pink spore masses may be found in the sunken places. This is the only one of the leaf spot diseases which causes serious direct injury also to the fruits. On the fruits of both crops roundish sunken depressions are produced which under favorable conditions soon show pink centers due to the formation of masses of sticky spores. If great care is not exercised in saving seed from such diseased melons they will become covered with these fungus spores and thus the disease be carried over winter. Save seed only from healthy melons. Furthermore, leaves, stems and fruits in anthracnose diseased fields will carry the fungus over winter. Therefore, rotation of crops should be practiced so that vine crops will not follow vine crops. This is a very important control measure when combined with seed disinfection. The seed should be treated before planting to kill disease organisms, by soaking 5 minutes in a 1-1000 solution of mercuric chloride and rinsing thoroughly in water. In spite of these precautions, the disease appears in the field, spraying with a 4-4-50 Bordeaux Mixture or dusting with copper-lime dust is fairly effective if started before the disease appears and applied thoroughly.

2. *Leaf blight* while it attacks both crops is most common and serious in Maryland on the cantaloupe. It is also caused by a fungus (*Macrosporium cucumerinum*). The spots are at first very minute and appear faintly yellowish above and watersoaked below. Later they enlarge and the centers be-

come dark brown and have characteristic concentric target board markings. The disease so far as known, does not cause appreciable injury to fruits except when over ripe, but by killing the foliage prematurely, it reduces the yield of melons and their quality is made inferior.

Spraying or dusting as indicated for anthracnose is the best known method of control.

3. *Angular leaf spot* due to a bacterium (*B. lachrymans*) is characterized by small angular spots on the leaves and roundish areas on the fruits of the cucumber. On the leaves the spots are at first watersoaked, later becoming light tan or almost white. These tissues often dry up and drop out leaving ⅛ inch angular holes bounded by the leaf veins. On moist days or early in the morning, drops of a sticky whitish bacterial exudate may be seen on the under sides of the watersoaked spots. In wet seasons the disease often causes considerable damage when infection begins early. It is spread by pickers and by insects. The disease is carried over winter on the seed and may often be found causing spots on the young cotyledons. It does not live over in the soil, however. Treating the seed for five minutes in a 1-1000 solution of mercuric chloride (corrosive sublimate) followed by thorough washing for 15 minutes in running water and drying, constitutes very effective control. Growers should be cautioned against replanting with untreated seed. Should the trouble be carried into the field from nearby diseased cucumbers, its spread can be controlled by spraying with 4-4-50 Bordeaux Mixture. So far as known, this disease does not attack cantaloupes.

4. *Downy Mildew.*

The early symptoms of downy mildew are small, yellowish, faintly angular spots on the leaves which in warm, moist weather soon enlarge and cause furling and withering of the entire leaves and premature death of the plants, thus reducing the yield and in the case of melons resulting in greatly inferior quality. On the under side of the older spots the presence of grapelike clusters of purplish fungus spores of the causal fungus (*Pseudoperonospora cubensis*) may be seen. This disease does not usually appear till late

in the season, but when favorable weather occurs it progresses very rapidly and kills the plants in a few days attacking the older leaves first and spreading from the center of the hill outward.

Downy mildew is difficult to effectively control. However, it can be checked and partially controlled by timely and thorough spraying with 4-4-50 Bordeaux Mixture, or dusting with Copper lime dust. The spray should be applied at the very first appearance of the disease and further applications made at intervals of 7 to 10 or 15 days, depending on weather conditions. Dry weather will hold the disease in check and spraying may be done at longer intervals, but with the occurrence of moist weather more frequent applications are essential. By careful and thorough spraying the disease may be held in check until a fair crop has been harvested.

Dusting for Control of Leafspot Diseases

Dr. R. A. Jehle and Mr. Cory, of your own State Experiment Station, have done several years work in the comparison of spraying and dusting for the control of leafspot diseases in Maryland, and sum up their conclusions in the following words:

"In making a choice between dusting and spraying for the control of cantaloupe pests, several factors should be considered. Beetles can be much more effectively controlled by dusts than by liquids, while aphids can be controlled by dusts only. When one machine is to be purchased for all of the work, a duster is necessary. With power and traction dusters the work can be done more rapidly, since forty acres can be dusted in ten hours, while only sixteen acres can be sprayed in ten hours with a traction sprayer. The power required to draw a traction sprayer is greater than that required to draw a traction or power duster. The weight of the fungicidal material carried by a sprayer per acre in a season is 3,000 pounds, while the weight carried by a duster is 100 pounds. There are no leaky valves and only a slight clogging of nozzles in the duster.

They state further:

"The yield of cantaloupes can be increased 10 to 15 per cent. by spraying and dusting and the quality of the fruit can be greatly improved.

The ripening period can be prolonged two or three weeks by dusting or spraying.

Observations indicate that best results can be obtained by making five applications at seven to ten day intervals, beginning just before the vines begin to run.

About 100 pounds of dust or 3,000 pounds (375 gallons) of Bordeaux Mixture are required to treat one acre of cantaloupes, making five applications.

Dust should be applied early in the morning. At this time the atmosphere is usually calm and the vines can be more thoroughly coated.

Results from dusting and spraying were practically identical. There was very little difference between the cost of dusting with power and traction dusters and spraying with a traction sprayer."

It is suggested that those interested in further details of this work secure Maryland Bulletin 262 from the Experiment Station at College Park.

Mosaic

The so-called mosaic disease which attacks both cucumbers and cantaloupes is one of the more recent as well as more serious troubles with which Maryland growers have to contend. The name is derived from the fact that the disease causes a mottling of the leaves similar to a mosaic in which yellow or whitish areas are mingled with green. The trouble is not, so far as known, caused by a fungus or bacterium, but instead by what is known as a virus in the plant juices which may be carried from plant to plant and field to field by insects and other agents.

In the northern central states where cucumbers are grown very extensively for pickling purposes, the losses from the mosaic disease have been quite serious in numerous instances and all together it has been estimated that about 10 per cent. of all plants have the disease. It is considered the most serious disease attacking the crop. In addition to causing mottling and curling of the leaves of both crops, and wart-

ing, distorting and discoloration of cucumber fruits, it produces pronounced dwarfing of the plants, especially if they are infected early. The warting of cantaloupe fruits while sometimes seen is not a conspicuous symptom. The end result is a very much reduced crop, the majority of which is unmarketable, especially after midseason when the plants should be bearing at their best. In your eastern Maryland counties, where cucumbers are grown for table stock, Dr. Jehle, of your State Experiment Station, has estimated the losses from mosaic in 1926 at 50 per cent. No industry can long survive such losses. In the case of cantaloupes, heavy losses have also been suffered by many growers.

The mosaic disease is highly infectious and is carried from plant to plant by beetles, both striped and 12-spotted, by aphids, by pickers and doubtless by other agents. The extremely infectious nature of the disease is shown by the fact that if the juice of a mosaic plant be diluted with ten thousand parts of water and two or three drops of this is injected into a healthy cucumber plant, it will cause mosaic in a very few days. Even the breaking of the leafhairs which occurs when two intertwined plants are pulled apart, is enough to transfer the disease from a mosaic to a healthy plant.

The mosaic disease, because of the fact that no casual organism has yet been found, has been difficult to work with. Nevertheless, one by one the facts relative to its method of surviving the winter have been determined and they are the key to the method of controlling this disease.

Only in rare instances, so far as now known, does the virus live over winter in the seed of the cultivated cucumber or cantaloupe. Likewise, it has not been found to survive the winter in diseased cucumber or cantaloupe vines, nor in the soil of fields where the disease has been. Insects, so far as known, do not carry it from one season to the next.

Several years of careful, painstaking work has proven that cucumber mosaic also attacks and can be carried by insects to the annual wild cucumber, and to the perennial pokeweed, milkweed, catnip and to two species of perennial

ground cherry. In the seed of the wild cucumber it has been found to live over winter to the extent of about 10% Likewise, the mosaic diseased roots of the other plants mentioned send up diseased shoots in the spring, which become fresh sources of infection for nearby cucumber and cantaloupe fields.

These then, are the most important means now known by which the mosaic disease bridges the gap between the seasons.

When these wild host plants of mosaic begin to send up their first shoots in the spring, which is before cultivated vine crops are planted, the beetles and plant lice coming out of winter quarters, feed upon them until the vine crops are up. Then some of these insects find their way to the cucumber and cantaloupe fields carrying with them, in their mouth parts, some of the juice from the mosaic wild host plants on which they have been feeding. The moment they begin to feed upon the cucurbit plants they inoculate them with the mosaic disease and within a day or two these plants in turn become sources of further infection to nearby plants, even though their leaves or fruits may not show the disease symptoms until a week or more later.

In the case of cantaloupes, which are frequently started in hotbeds or cold-frames and later set in the field, several instances have come to our attention where the initial mosaic infection came from diseased pokeweeds which were found growing in or near the cold frames so that many of the young plants were infected before they were set in the field, and heavy losses resulted. In more than one case a wind break of mosaic pokeweed plants surrounded the cold frames and as a result, not only was the crop set with these plants infected with the disease but other nearby seed-sown fields were in turn affected with mosaic and heavy losses incurred.

Mosaic Control Measures

Since we have found out that certain common wild plants are responsible for carrying the mosaic disease over winter, either in their seeds or roots, the most obvious means of stopping this and thereby checking the disease, is to locate

the field away from these weeds, or to eradicate the weed hosts near the cucumber and cantaloupe fields and cold frames.

Carefully conducted tests, carried on for five years under actual field conditions in Wisconsin, have resulted in the development of a method of control which actually reduced the mosaic infection from a maximum of 100% on August 1-15, the common condition in the locality prior to this work, to an average of 2-5% in 12-15 pickle fields on September 1. This nominal infestation arriving so late in the season does not materially affect the crop.

In another locality where a single field had been known to have 100% of mosaic cucumber plants by the first or middle of August annually for four successive years, the disease was reduced by the method of wild host eradication the two following years, so that it did not appear until August 19 and 20, and in early September only 7 and 12% respectively of affected plants were found.

During the season of 1927 in the vicinity of Salisbury, Md., this method of control was tried out under my supervision with the coöperation of six cucumber growers with exceptionally good results. Briefly, the returns from 9¾ acres of cucumbers in 1926 when the mosaic disease was present averaged $43.80 per acre, while these same growers in 1927, by working in close coöperation with the county agent and the state extension pathologist in the eradication of the wild hosts of mosaic, averaged $403.31 per acre from 6¼ acres of cucumbers.

As a check on these results, the crop returns for the two seasons were secured from another grower who had mosaic in his crop both years, but practiced no control measures. In 1926 this man made $135.00 from 1½ acres, and in 1927 his returns were $195.00 from the same acreage. In 1926 the average price of cucumbers was 65 cents per bushel, while in 1927 they brought 85 cents per bushel.

Learn to know wild host plants of mosaic.

For the first step in this control program, it is essential that the wild host plants be recognized and that the farmer knows where they are commonly found.

The wild cucumber is a familiar vine, especially in the middle west where it grows on fences and along streams or ditches and in many sections it is used as an ornamental vine on the garden fence or back porch. Its abundant clusters of white flowers and its eggshaped, prickly fruits are well known.

The common milkweed is also a widely distributed weed, known by its milky, sticky juice, its balls of dull purplish flowers followed by seed pods with white cottony fuzz and its underground shoots which make it hard to kill out. It is often found by roadsides and fences, in fields, pastures and around farm buildings.

The pokeweed is perhaps the commonest mosaic host in Eastern Maryland, where it occurs quite generally in open woods and pastures, around farm buildings and along hedgerows and ditches. The young shoots with large, soft, green, tender leaves are used in some sections for greens, and its long clusters of dark purplish berries are conspicuous in late summer.

The perennial ground cherry plants, also mosaic over-wintering hosts, are likewise found occasionally in Maryland. They are familiar to many because of their small or medium-sized yellowish or greenish bell-like flowers which hang down singly from the axils of the leaves and are followed by round berries enclosed in green bladdery husks.

The essential points in the mosaic control program are three, (1) location of field, (2) eradication of mosaic host plants and (3) control of insect pests which spread the disease.

In the first place, the location of the field should be made with reference to the known presence of the mosaic wild host plants. It should be placed away from farm buildings, streams, hedegerows and woods where these host plants are known to abound. One of the best possible places for the cantaloupe or cucumber field is where it is surrounded by fields of corn or other cultivated crops, since in the ordinary cultivation most of the weed hosts of mosaic will be killed. Such a location is also away from places where insect carriers generally hibernate. Rotation is advocated to get away

from other diseases which live over in the soil as well as to avoid mosaic host plants. In some cases this alone has been sufficient to markedly reduce losses.

When the location has been selected and the crop planted, the field and surrounding land within a radius of 50-75 yards should be gone over very carefully and all plants known to harbor mosaic should be promptly removed, including those already mentioned. This is the most important part of the control program and should be done with great care to make sure that no mosaic plants are left. Frequent inspections of the same territory should be made every 5-8 days throughout the crop season to make certain that all fresh shoots that appear are promptly pulled or dug out. Some plants like milkweed, keep sending up fresh shoots until late June or early July if the roots are not dug up, making frequent pulling necessary. Pokeweed plants have large, fleshy roots, and these should be cut down well into the soil and the cut surface covered with salt. It is not enough to cut off the early shoots as others will follow and they are sure to have mosaic if the roots are infected.

If any mosaic cucumber or cantaloupe plants should appear in the field, they should be pulled as long as they can be removed without interfering with nearby plants.

Since striped and 12-spotted beetles and aphids are important agents in spreading mosaic in the field, every effort should be made to control these insects by the use of the best available control measures. Nicotine dust applied regularly is effective against all these insects. Gypsum and calcium arsenate 1-20 is also a good insecticide for the beetles.

Scab

The disease commonly called scab or spot rot of cucumbers has long been known in the northern pickle growing states and in seasons with favorable weather conditions, has caused heavy losses to growers in these localities. Its most conspicuous symptom is the occurrence of spots on the small or medium-sized fruits which are sunken, at first water-soaked and later olivaceous, due to the production of spores of the causal fungus (*Cladosporium cucumerinum*). Dur-

ing moist days or early in the morning, milky drops of exudate may be seen on the young, diseased spots. These spots are generally not large, 1/8-1/4 inches, except where several have grown together. Lesions are also caused on the stems, petioles, and on the leaves, resulting in irregular, wrinkled growth.

Scab characteristically thrives in moist, cool weather and furthermore, attacks the young growth of stem, leaf and fruit more severely than the old. Under favorable conditions the disease spreads very rapidly and does great damage.

In the making of pickles, all the scab affected cucumbers have to be thrown out and when the disease once becomes general in a field, it is the practice of the salting station men to refuse further deliveries from such fields because of the practical impossibility of sorting out all the affected fruits and because of the extra expense made necessary by the additional sorting required.

I have not seen this disease on cucumbers in Maryland. However, last summer I found it causing considerable injury to cantaloupes, attacking both leaves, stems and fruits, the most conspicuous injury being to the small fruits where large, deep, irregular, scabby depressions occur, making such melons unmarketable.

From our experience with cucumber scab, we know that the causal fungus lives over winter in the soil on diseased fruits or vines. Crop rotation is, therefore, the first essential to control. Spraying has not been very successful in the control of cucumber scab, but dusting has not been given a complete trial.

Fusarium Fruit Rot

Another disease of cantaloupes which occurs in Maryland, and for which no control measures have been worked out, is the Fusarium fruit rot. The first specimens were brought to our office from Anne Arundel County, near Baltimore, nearly ten years ago, but no work has been done on it until recently. So far, the causal fungus which appears to be a species of Fusarium, has been found only on the fruit as it nears maturity. In the early stages of the

disease, a darkening of small areas of the rind is visible through the netting. The spots gradually increase in size and depth of penetration, become slightly sunken and often crack open. The diseased areas soon become covered with salmon-colored masses of Fusarium spores. The lesions are usually on the upper surface of the melon. When these have penetrated through the outer rind the spots become sunken and soft and such melons are unmarketable. One grower estimated a 60% loss on his late crop of melons and a 5% loss on his early crop.

This trouble is known to be fairly common in Anne Arundel County. It seems to be favored by high temperatures. No methods of control have yet been worked out.

The general control measures for cucumber and cantaloupe diseases may be summarized as follows:

CUCUMBER AND CANTALOUPE DISEASES AND THEIR CONTROL

Disease	Cause	*Method of Overwintering*	*Control*
Bacterial wilt	Bacterium *Bacillus tracheiphilus*	In the bodies of striped beetles	Pull, burn or bury wilted plants. Control beetles with dust or spray
Anthracnose	*Fungus Colletotrichum lagenarium*	On seed and in soil where disease occurred last year	Rotate crops treat seed with currosive sublimate; spray with 4-4-50 Bordeaux or dust with copper lime
Angular leafspot	Bacterium *B. lachrymans*	On cucumber seed	Treat seed with corrosive sublimate; spray if needed with 4-4-50 Bordeaux or dust with copper lime
Downy mildew	*Fungus Pseudoperonospora cubensis*	Uncertain	Spray thoroughly with 4-4-50 Bordeaux beginning when disease appears or dust as above
Mosaic	Virus in *plant juices*	In wild cucumber seed and in roots of poke weed, milk weed and other host plants	Eradicate wild hosts near beds or fields; plant away from buildings, woods, hedgerows or streams; control insects
Scab	Fungus *Cladosporium cucumerinum*	In soil where diseases occurred last year	Rotate crops

HOW TURNIP BROCCOLI IS GROWN AND MARKETED ON THE EASTERN SHORE

By Mr. G. R. Cobb, Salisbury, Maryland.

I first learned of the broccoli crop from Mr. Thomas D. Thomas, of Laurel, Delaware, who was the pioneer grower in this section. Mr. Thomas obtained seed for his first crop from New Jersey about five years ago. The first year it yielded $700.00 per acre. He then increased his plantings and furnished seed to his neighbors.

In the last three years the acreage has increased greatly in the Del-Mar-Va territory, and the markets of New York and Philadelphia are being glutted.

A local Broccoli Association was formed in Wicomico County, but failing to make money on the crop shipped in hampers, they have more recently followed the practice of tying the stalks in bunches weighing about one and one-half pounds each and packing in crates—twenty-four bunches to the crate. The Association has had some costly experiences with carlot shipments, having lost heavily on two cars, due probably to the fact that the cars were loaded too solidly and too heavily. Increasing amounts are going to market by truck. The Association last year had eighty-six members.

The seed is sown from August 20th to September 1st. About two pounds of seed are required per acre and a Planet Junior seeder usually gives good results. The plants should stand four inches apart, but it does not pay to thin. It will not grow on poor soil. It follows cucumbers and cantaloupes well. From 150 to 200 pounds of nitrate of soda is used per acre but better results would undoubtedly be secured through the use of a complete fertilizer. Cutting begins about March 25th, the best time to cut being just before the blossom start to open. When growers receive less than $2.50 per crate they stop cutting. It is then plowed down for green manuring. The leaves are sometimes cut in the fall and sold in hampers, but this is not good practice as it interferes with the spring development.

This crop has been grown extensively in New Jersey for several years, the sprouts being much liked by Italians. The word broccoli means "sprouts" in the Italian language. There are many species of broccoli, but the type now being grown on the Eastern Shore is apparently a selection from the Seven-Top Turnip.

To be of high quality, the stalks must grow rapidly so as to be tender and of good color. It must be handled and packed carefully, and put on the market in good condition. Ice is often used in the crates when shipped.

THE PRESENT STATUS OF SEED TREATMENTS FOR THE CONTROL OF VEGETABLE DISEASES

By H. A. Hunter,
University of Maryland, College Park, Maryland.

Seed treatments in general might be considered at this time as being in an intermediate stage. Old methods have not been entirely given up or new ones adopted.

Treatments for seed-borne diseases have been in more or less successful use for a long time, but growers have been slow to adopt the practices because the materials that were available were apt to cause injury and the methods were rather long and tedious.

Information on seed treatments, until the last few years, has been rather difficult to obtain. Work that has been reported has been on scattered diseases. Within comparatively recent years a large amount of systematic work has been undertaken by research men in various institutions and their results should be available in a few years. The appearance of a number of organic mercury compounds on the market for seed disinfection, played a large part in prompting this work.

As new diseases have been discovered and old ones studied, it has been found that a number of these diseases are carried and distributed on the seeds of the plants affected. The disease-causing organisms may be carried in either or both of two ways: the reproductive parts (spores) may adhere to the surface of the seed, or the vegetative growth

(mycelium) may penetrate the seed coat and sometimes even the embryo. Most seed treatments are effective merely in killing the adhering spores of seed-borne diseases of the first type and have little or no influence on those of the second type in which the mycelium has penetrated the seed.

Some of the older seed treating materials are copper sulphate, formaldehyde, mercuric chloride and hot water as liquid treatments, and copper carbonate as a dust treatment. In recent years a number of organic mercury compounds have been developed which have shown particularly good results in the limited tests which have been conducted with them. The older materials are strong disinfectants but often produce severe injury to the seed, particularly where the directions for treatment are not carefully followed. The new organic mercuries have high disinfecting properties and are more slowly toxic to plant tissues, which makes them less liable to cause seed injury. In addition, they have a partial lasting effect when the seed is planted, which helps in controlling diseases which are carried internally in the seed and also against invasion by soil organisms, such as the damping-off fungi; they possess repellant properties towards insects and rodents; they are available in either dust or liquid forms; and the time and labor required for treatment is less than for most of the other methods. These properties insure a greater latitude of application and safety and tend towards a greater efficiency. The dust method seems to be equally as effective in most cases as the liquid treatment and requires less time and effort for treatment. Also, the dusts are less likely to produce injury to germination with a number of varieties of seed. With diseases which require pre-soaking of the seed, and with those such as Rhizoctonia of potato which require considerable penetration, the liquid treatments give better results. At the present time, the most widely used treatments for vegetable crops are mercuric chloride (corrosive sublimate), one part in a thousand parts of water, for periods ranging from five minutes to an hour and a half, and the various organic mercury compounds, either in dust or liquid forms according to the directions given by the manufacturers.

Among the truck crop diseases with which excellent results have been secured by seed treatment may be mentioned the root, stalk and ear rot diseases of sweet corn; blackleg of cabbage; anthracnose and angular leaf spot of cucumber; scab and Rhizoctonia of potato; black rot and scurf of sweet potato; and collar rot and damping-off of tomato. Treatments have been recommended for various diseases of beans, beets, crucifers, cucurbits, eggplants, lettuce, onions, peas, peppers, potatoes, sweet corn, sweet potatoes and tomatoes.

Very favorable results have been secured at College Park during the last two years with organic mercury treatments of field corn, as shown in the results which follow. These figures should be equally comparable to sweet corn. The same diseases are usually associated with both crops and ordinarily produce the greatest injury on sweet corn.

Results of field corn seed treatment tests at College Park, 1926 and 1927:

Material	Yield per acre bu.	Increase over check	
		Bu. per acre	Per cent.
1926:			
Semesan	42.98	6.36	17.37
Uspulun	42.26	5.64	15.40
Check	36.62	0.0	0.0
1927:			
Semesan, Jr.	76.7	18.1	32.7
Kharasch III	64.7	9.3	16.8
Check	55.4	0.0	0.0

Other treatments were tried in 1926 but none showed up as well as those reported.

The season in 1927 was particularly favorable to injury by the root rot organisms; therefore, the increases obtained through seed treatment are probably considerably higher than they would be in a normal year.

Good results have been secured by treatment of sweet corn seed in Illinois and Iowa by Reddy, Holbert and Er-

win. Particularly favorable results were secured with Diplodia-infected seed, the cause of one of our serious dry rots in Maryland. The results secured with a few of the most promising materials are given below:

Result of sweet corn seed treatment tests in Illinois and Iowa, 1925

Material	Per cent. ncrease in yield over checks	
	All lots	Diplodia infected
Semesan (soak)	10.20	43.50
Semesan, Jr. (dust)	7.45	36.30
Uspulum (soak)	10.75	42.25
Bayer Dust	6.25	44.70

A test was conducted in Maryland last year to determine the influence of seed treatments of potato on soil infection by scab. Mercuric chloride (corrosive sublimate) and a number of organic mercury compounds were used. Scab was severe in all of the plots regardless of the treatment, indicating that none of the treatments afforded any marked protection from soil infection.

The effect of treating sweet potatoes, artificially inoculated with black rot, with a number of disinfectants, was tested at Ridgely last year. The yield records of a few of the treatments which gave good results are shown in the following table:

Results of sweet potato seed treatment test, Ridgely, 1927

Treatment	Yield—bu. per acre	Per cent. by wt. of primes and seconds	Per cent. by wt. of diseased primes and seconds
No. 21 Bel, 1-15, dip	325.0	75.0	8.58
Mercuric Chloride, 1-1000, 5 min.	284.5	73.4	19.6
Semesan Bel, 1-10, dip	250.0	62.0	7.63
Check	117.3	35.5	38.8

Treatment of tomatoes with Semesan dust by Mr. Goodwin, in Caroline County last year, gave plants which were considerably earlier and much more vigorous than the untreated checks. When no disease organisms are present, however, a slight retardation in germination can be expecteed with tomatoes treated with organic mercury dusts. Tests are to be conducted this year in various parts of the State to determine the need and effects of treatments.

In conclusion, it might be said that treatments can not bring dead seed to life, nor can they remedy the ill effects of poor selection and handling. They are of immense value against certain specific diseases and no doubt they constitute a good insurance against the losses of certain other crops, provided there is no injury such as the reduction and delaying of germination due to the seed treatments.

After appointing the standing committees, President Patten declared this meeting adjourned until the following morning.

SECOND SESSION

January 5, 1928

"SOILS, FIELD PREPARATION, PLANTING, CULTIVATION AND FERTILIZATION OF TOMATOES"

By L. M. Goodwin,
Canning Crops Specialist, Denton, Md.

The total annual tonnage of tomatoes produced in Maryland is no doubt adequate for our needs. Or at least a study of market conditions over the period of the last three years presents little to cause great enthusiasm for an increase. An increase in tonnage of the quality of raw stock that has been produced would probably be unwise but I think that we will all agree that there is unlimited opportunity for increased good quality raw stock and good quality canned tomatoes. It is hardly necessary to point out that a quality raw product cannot be secured from such low yielding fields as three tons per acre or less.

The first important principle that we must keep in mind is that the tomato is not a field crop that can be handled like wheat or corn, but is a vegetable requiring intensive culture for its successful production. I know of no crop produced in Maryland that reacts to good culture as positively as the tomato. We have in the same neighborhood variations in yield from one or two tons per acre to as high as fifteen or more. It is evident, after consideraing the variations that occur in yields in the same community, we must conclude that there are many improvements in culture within easy access for the average grower.

The tomato seems to be well adapted to most any type of soil in Maryland, provided it is good soil. No crops can be produced successfully or profitably on poor, run down soils. Liberal application of commercial fertilizer can be more profitably applied to good soils than to poor soils. That is to say a soil in a high state of fertility can make more efficient use of commercial fertilizer both in retention and making the plant food elements available for the plant.

For the best control of Early and Septoria Blight land to be put in tomatoes should be fall ploughed. Investigation has demonstrated that the fungi causing the two blights mentioned, live over during the winter on nearly all kinds of dead plant material. By completely turning under all plant remains the disease does not survive and the chances for the succeeding tomato crop becoming infected are considerably reduced. Light type soils ploughed in the fall should be sowed to some kind of cover crop to prevent blowing during the winter. Fall ploughing and early preparation of the soil to be used for tomatoes has the advantages of providing better moisture conditions and elimination of such troublesome insects as cut worms.

Tomatoes may follow either grass or a cultivated crop in the general farm rotation provided, of course, that the preceding cultivated crop is not a related one as potatoes, peppers, or eggplant. The latter crops are subject to attacks by many of the same insects and diseases as the tomato. A long rotation is best, that is, tomatoes should not be planted in the same field oftener than once in five or six years.

The tomato crop does not draw heavily on the soil fertility, nevertheless it is a crop that responds readily to liberal fertilization. Stable manure should be used if it is available. An application of ten tons or more per acre can be used profitably. This should be applied broadcast and if it contains coarse material as corn stalks or straw it is wise practice to plow it under. However, well rotted manure may be applied after the ground is plowed and disced into the surface. If stable manure is not available, some other means of supplying humus must be provided, this can probably best be done by the use of green manure crops.

In addition to the stable manure or the green manure crops a liberal application of commercial fertilizer should be used. The application will vary from 800 pounds to 1,200 pounds, depending on the amount and quality of the stable manure used, the condition of the soil, etc. A high grade, complete fertilizer having an analysis 4-8-8 or higher is most economical. A variation in the percent of nitrogen is practical under certain specific conditions.

There is a certain amount of difference in opinion with growers concerning the best method of applying the commercial fertilizer. We have little investigational information to shed light on the question. Until definite experiments are conducted to furnish us with specific information, it is probable that the following recommendations will give reasonably good results. When we are dealing with the heavy type soils, it is probable that the fertilizer can be applied broadcast all at one application one week to ten days before the plants are set. With light soils different methods should be employed to get the best use of the fertilizer applied and provide for a constant supply of available plant food materials. A good system would be to apply four hundred pounds of a complete fertilizer per acre in a strip about one foot wide down the rows, which have been previously marked out. This is then cultivated in with a cultivator having large flukes, one on each side, and a small fluke in the middle so that soil is thrown over the fertilizer making a modified ridge. The ground is again marked for planting so that the row comes in the center of

the ridge. At the second cultivation an additional four hundred pounds per acre is applied in narrow strips on both sides of the row, exercising care to avoid allowing the fertilizer to come in contact with the plants. At the last cultivation two hundred pounds per acre of nitrate of soda is applied between the rows and cultivated in. This method of applying fertilizer supplies the plants with a continuous source of plant food until the crop of fruit is made. No doubt many of the troubles that we ordinarily attribute to attacks of disease are merely physical evidences of plant starvation.

There are several methods of planting being followed successfully. Disc markers, spades, trowels and plant setters are some of the tools used. In any event, it is a matter of exercising care and judgment in using any of the hand methods to see that the soil is properly firmed about the roots and the stem of the plant is not injured. The mechanical plant setter is coming into more general use in Maryland, and is being used successfully. The main objection is that the plants are not set to allow for cultivating both ways. However, this is not so important unless the piece of ground has an unusual amount of weeds. The plant setter with attachment for watering is used to good advantage during dry weather.

The distance of planting varies nearly as much as the method of planting. The usual practice is probably 4′ x 4′ although some successful growers are of the opinion that the largest yields are obtained when the plants are set in rows four feet apart and three feet apart in the row.

Frequent shallow cultivation is best practice. Deep cultivation can serve no good purpose because the roots of the plants are sure to be injured and of course, root pruning serves to check the plant growth. Do not cultivate when the vines are wet and do not continue cultivation to the point that the vines are injured or the green fruit knocked off.

TEN TON TOMATO CLUBS FOR ADULTS

BY E. I. OSWALD.

District Agent, Extension Service, College Park, Md.

The tomato crop is one of Maryland's most important assets. About 40,000 acres of Maryland land is devoted to the crop, most of which is confined to the growing of the tomato for canning purposes. While this industry is a very important one in the state at the present time, a few years ago it was considered of even greater importance when Maryland canned more tomatoes than any other state in the Union, in fact, more than all the other states combined. During the past few years, this condition has changed very materially. The acreage has fluctuated from 12,000 in 1921 to 64,000 in 1927. The yield likewise has been variable, ranging from an average of one and one-half tons per acre up to nearly six tons per acre. The quality has also been greatly affected and has had untold influence on the industry.

Other states have found that they could grow tomatoes successfully and are proceeding to do so. Their lands were new and the industry was put on such a basis that the yield and quality figured very materially. Maryland, therefore, has found herself during the past few years in position where it was necessary to make special effort to increase the yields per acre and improve the quality of the pack. For some time those interested in the industry have been discussing plans for accomplishing this end.

The Ten Ton Tomato Club has been suggested as a means to this end and if properly organized would no doubt have a great effect on the industry as a whole. The canners and the growers should be mutually interested in such an undertaking and should be impressed with the fact that through clubs of this kind not only the yield per acre would be increased but the quality would be greatly improved. At first thought it might be said that clubs of this kind would have a tendency to encourage an overproduction. This would hardly be true since it would encourage the growers

to confine their efforts to a smaller acreage rather than to an increased planting.

It might be well in planning such a contest, to follow the method adopted by Indiana and organize the clubs on a ten ton plus basis, with the hope of making it something worth working for. The mere reaching the ten ton mark would not make the undertaking worth while since such a goal could be attained easily in some of the tomato growing sections. Therefore, it might be well to make the clubs ten ton plus clubs.

These clubs might be organized along three distinctly different lines. First, around the local canning factory as they are in Indiana; each canning factory organizing its contractors into a club of not less than ten nor more than fifty growers, each member to have at least three acres and as many more as he can successfully grow according to the recommendations laid down by those in charge of the contest, this work being conducted in coöperation with the canners association, the farm bureau, the local canners and the extension service.

The Indiana plan further provides for a list of prizes and medals to be awarded to the winning contestants; a gold medal suitably engraved to all members securing twenty tons or more per acre; a silver medal to all members securing fifteen tons or more but less than twenty tons; a bronze medal to all members securing ten tons or more but less than fifteen; a state prize of a gold watch suitably engraved to be awarded to the club member securing the highest yield in the state. In addition to these awards, the canners agree to give to each club member who shall grow ten tons or more per acre, an extra fifty cents per ton as an award for high yield and quality of product.

Other sections of the country have conducted contests similar to the ten ton plan on a local and community basis by organizing the growers of a community or county into a ten ton tomato club confining the activities to small local areas and providing prizes from local sources. This plan in some instances, has been fostered by farm bureau organiza-

tions, in other instances by bankers' associations or local boards of trade.

A third plan is to conduct the contest on a state-wide basis under the supervision of the state extension service and the canners' organizations coöperating with commodity associations, farm bureaus, and granges. This plan would no doubt be best suited to Maryland conditions, and could be arranged for on a state-wide basis by a committee consisting of growers, canners, farm bureaus, and grange officials, specialists of the extension service, and county agents selected from the tomato growing counties.

The greatest difficulty in conducting a contest of this kind in Maryland according to the Indiana plan, would be the fact that conditions in all of the tomato growing counties are not the same and that the contract system is not used in all sections. Many sections prefer growing for the open market rather than contracting with the canners at a fixed price per ton or basket.

The 400-bushel potato club conducted in Pennsylvania for the past few years has been an outstanding example of a successful undertaking of this kind. This contest has steadily increased in popularity until at the present time it has spread into nearly all the potato growing sections of the state and its many fold advantages have been shown.

In planning a ten ton tomato club for Maryland, it would be well to outline the plan very clearly before presenting it to the growers and canners of the state, stressing first that the object of such a club would be to produce higher yields of canning tomatoes per acre, to improve quality and cultural methods.

A well formulated plan of recommendations should be provided for this undertaking. First, the selection of a suitable field considering location and soil types; second, recommend fall plowing; third, the application of stable manure and commercial fertilizers in sufficient quantities; fourth, the selection of good seed of approved varieties sown as early as possible in cloth covered frames so as to provide healthy stocky plants for early setting in the fields; fifth, dusting and spraying of tomato plants in beds; sixth, the

practicing of a five-year rotation; seventh, the proper and frequent cultivation in the fields to encourage proper development of the plant; eighth, the timely picking and delivering to the canning factory in good condition; ninth, keeping of accurate records as to yields and dates of picking.

The county agent and extension officials should assist in every way possible, in advising growers in cultural methods, harvesting, and in the keeping of records. Medals and prizes should be arranged for by the Tri-County Canners' Association, commodity organizations, and where possible by business men's clubs, and chambers of commerce. A plan similar to the Indiana plan could be arranged providing a gold watch of different values for the first, second, and third highest yield in the state; a gold medal for those growing twenty tons or more per acre; and a silver medal for those growing from ten to twenty tons per acre.

The plans for this contest should be brought before the growers and canners in each of the tomato growing counties in every way possible through the medium of items in the local newspapers, news letters, letters from county agents, canners, and business organizations, and publicity campaigns of all kinds.

The rules governing the contest and enrollment blanks should be placed in the hands of every tomato grower and canner. A revised and up-to-date copy of a Maryland Bulletin, entitled, "More Tomatoes From Fewer Acres," should be placed in the hands of every club member enrolling in the contest with the requirement that the recommendations of this bulletin be carefully followed. Timely letter helps should be mailed out by the canning crops specialist at frequent intervals through the entire duration of the contest.

BEAN DISEASES

By R. A. Jehle.
Specialist in Pathology, College Park, Md.

Mr. Chairman and Gentlemen:

The two bean diseases which are most prevalent and destructive in Maryland, are anthracnose and blight. The former is caused by a fungus and the latter by a bacteri-

um, but both are seed borne diseases. In both diseases the seed coat is penetrated by the causal organisms, making seed treatment ineffective. The use of disease free seed is the only practical method which has been found for the control of anthracnose and blight. Some anthracnose resistant varieties have been bred but none of them are suitable to canning and marketing requirements of Maryland bean growers. Investigations on the overwintering of the anthracnose organisms have been conducted, and they were found to live over only in the seed. These investigations were conducted in climates where the winters are severe, and it is possible that the anthracnose organisms may also live over in the soil or in diseased plants in Maryland and in states further south. Rapp* states that the blight and anthracnose organism can survive the winter this way, the blight organism my survive the winter in the soil and on bean straw. The use of disease free seed will still be of primary importance.

Anthracnose and blight are diseases which depend upon the weather for their development. Damp, rainy weather and heavy dews favor their development and dry weather retards their development. When the organisms are present in the seed the losses are likely to be very severe in seasons favorable for the development of the diseases. There are many instances on record in Maryland where these diseases were so severe that it did not pay to pick the crop.

The Maryland bean growers are, therefore, confronted with the problem of locating a reliable source of seed practically free from diseases and from other undersirable qualities. Surveys of bean fields have been made by Dr. Harter, of the United States Department of Agriculture and others in various bean producing areas, and they have found that in arid regions of the west the beans were practically free from anthracnose and blight. The least disease was found in California where fields were located in which no anthracnose could be found. Surveys were made by the writer and by Mr. Hunter in Maryland fields grown from

*120 Rapp, C. W., Bacterial blight of beans Oklahoma Agr. Exp. Sta. Bull 131.

both eastern and western seed. Although some anthracnose was found in all of the fields, it was much less prevalent in seed grown from Idaho and Colorado than it was in fields grown from New York and Michigan seed. In fields grown on the Experiment Station grounds at College Park from seed furnshed by Dr. Harter, almost no anthracnose developed on the pods in any of the plots, but the plot from California seed was the only one in which no anthracnose was found on any of the pods. There was some blight on pods in all plots but least in the plot from California seed.

While on leave in California, the writer visited officials of the State Department of Agriculture, Experiment Station and Extension Service, as well as representatives of several bean seed producing companies. One of the seed companies agreed to grow plots of string beans and lima beans under very careful supervision, using varieties commonly grown for canning and for market in Maryland. Officials of the State Department of Agriculture, Extension Service and Experiment Station agreed to coöperate in the work. Seed from these plots will then be sent to Maryland where it will be planted in 1929 and accurate records of its performance will be kept. It is hoped that this will lead to bean seed certification in California.

SOME SWEET CORN SEED PROBLEMS

By W. B. Kemp,
University of Maryland, College Park, Md.

Before one can intelligently discuss any question concerning sweet corn seed it is necessary to know some of the details of the picture that comes into mind when the term sweet corn is mentioned. The details, of the mental picture, that appear most prominently, are largely determined by the inidividual's economic contacts with the crop. To one who grows corn for delivery at a canning factory, the ideal picture must include the possibility of a high yield in tons per acre. To the canner, a more prominent place is given to the number of cases of creamy corn one may expect

from each ton of ears delivered at the factory. To the market gardener, yield is measured in number of ears rather than in number of tons. The bigger, deep grained, single eared varieties so popular with the canner give way before smaller, multiple eared sorts in the market garden, because more ears of a more popular size mean bigger returns per acre.

Creamy consistency means nothing to the market gardener, but sweet, high flavor in a tender seed coat is exceedingly important to him. On the other hand the canner of cream style corn scrapes out the grain leaving much of the seed coat on the cob and adds the sugar necessary for any desired degree of sweetness.

To the canner, deep kernels and an absolutely uniform ripening are very desirable. The first, because it spells more cases to the ton, the second, because it means fewer blank cobs and old corn. For, with the present scarcity of farm labor, all of the corn on a given piece of land is pulled at one time and irregular development results in a lower yield for both grower and canner.

In contrast to this situation, the market gardener would usually be very much put out if all of one planting of corn was ready for pulling on the same day.

The point I am trying to make is just this: A variety of corn that has been developed to serve the best interests of the canner may be a poor corn for the market gardener, and a variety that has been developed to serve the best interests of the market gardener may be very unsatisfactory for the canner.

Recent efforts of the various agricultural experiment stations have been directed toward development of sweet corn that is better adapted for use by the canner than it is for the market gardener. A great deal of the attention has been centered around efforts to utilize the hibrid vigor that is manifested by the first generation of crosses between inbred strains. If the pollen from the tassel of a corn plant is dusted upon the silk of the same plant, and if proper precautions are taken to keep any foreign pollen away from this silk, the resulting seed will produce plants

much reduced in vigor, but highly similar to each other in their characteristics. If this process is continued through several generations the result is a number of weak but uniform strains. When two of these inbred strains are crossed the first filial generation is just as uniform in type as the parental strains, but the vigor of the plants approaches, equals, or exceeds the vigor of the parent variety before inbreeding began. When two inbred strains are found which produce a very desirable cross, this desirable progeny may be produced year after year by merely crossing the two inbred parental strains.

Seed of first generation crosses produced in this way is now coming onto the market from some of the commercial seed houses as well as from some of the agricultural experiment stations, but the extreme uniformity of ripening makes this corn more desirable for the canner than it is for the trucker.

One of the lines of work at the Maryland Agricultural Experiment Station is the selecting, within hibrid stock between sugar corn and field corn, in an effort to isolate sugar corn with the size and yielding capacity of the field corn parent. Considerable progress in this direction is being made, but this corn too, is better adapted for the canner than it is for the market gardener, for any yield improvement in it is brought about more by increasing size of ears than by increasing their number. Anyone who eats with the eye, as a typical consumer does, wants a corn on the ear that fulfills all the preconceived notions of what a sugar corn should look like.

In closing then, I want to state again that the present development, in sweet corn improvement, at the different agricultural experiment stations, offers greater promise for the grower who supplies a canning house than it does for the market gardener.

YIELD AND QUALITY OF PEAS IN RELATION TO TEMPERATURE

BY VICTOR R. BOSWELL,
Maryland Agricultural Experiment Station, College Park, Maryland.

Almost every gardener knows that the pea is a cool season crop, and will not give satisfactory yields in hot weather. The main centers of production are located in the more northerly states of the country, or in regions of high altitude, but extensive canning operations have been developed in some regions characterized by a warm spring and hot summer temperature. Peas are grown on a large scale for the market in some of the southern states, but they must be grown as a winter or a very early spring crop. Maryland is southernmost among the states which are important producers of peas for canning, so the influence of temperature is of especial importance here. Of course, it is equally important to the growers who supply the markets with fresh peas, but since they generally make every effort to secure early yields in order to take advantage of the high prices early in the season, they are less likely to suffer heavy losses from high temperature than the canning pea grower. It is well known that the crop is injured by hot weather, but it is not so well known to what extent the crop is affected.

Do slight differences in temperature have any effect upon the crop? Granting that even slightly higher temperatures depress the yield, what can be done to avoid them? Obviously, the only way in which we can determine, to any extent whatever, the temperatures to which the crop will be subjected, is by regulating the date of planting. It is probably true that many growers plant at the earliest possible date, but many others may drag behind considerably. What may be the result of delaying planting for ten days to two weeks beyond the earliest practicable date? Experiments conducted by the Experiment Station at College Park for four years, show in a striking way how seriously

the pea is affected by comparatively slight rises in temperature.

The fact that there is a narrow margin of profit in peas, and that they are often grown at a loss, makes it imperative that as high a yield per acre as possible must be produced. Greater total production is not desired, but a greater yield per acre is necessary to lower the cost per ton. There is a great deal of evidence pertaining to many crops which show that as the yield per acre increases the cost per bushel or per ton is lowered. Costs may not be lowered by using *excessive* amounts of high-priced fertilizers; but the judicious use of the proper fertilizers, good land, good management, thorough preparation, and *timeliness* of performing the necessary operations will usually yield more profitable results. There is a growing realization of the importance of this last point.

High temperature affects the pea plant in two ways, particularly. First, it decreases the time required for the plant to attain any given stage of development, and second, it decreases the yield. For convenience, we shall consider these two effects separately even though they are inseparably related.

Influence of Temperature on Rate of Development

Both the buyer and the grower want a reasonable "spread" or range in the harvest period. This spread enables a grower to harvest a larger acreage at the proper stage of development whether the product is destined for the market or for the cannery. The market grower is not interested in a very long range, however, for the period of high prices is usually short. The buyer for the market does not want all the peas coming in at once, nor does the canner, for they are not equipped to handle them. This spread is possibly more important with respect to handling the canning crop, so it shall be considered mainly from that standpoint. It is quite possible for such a wide range in harvesting to exist that the canner will lose, because the peas will not be coming in in quantities sufficient to allow him to oper-

ate near the capacity of his plant. This condition will, of course, hit the grower indirectly.

We have said that this spread in harvesting is desirable. How can it be secured? Three main factors are chiefly responsible for it: (1) Date of planting, (2) Variety, and (3) Soil conditions.

Date of Planting

How much difference in the date of harvest may result from sowing two lots of peas on different dates? It has been observed that the spread between harvest dates is always less than that between planting dates, if the two lots of peas were sown under the same soil conditions. The difference in time of planting may nearly or entirely disappear by harvest time. The later plantings develop more rapidly than the early ones, but that does not mean that they make more total growth; in fact, the later plantings almost always make less total growth, oftentimes very much less. Extending the harvest period by growing different varieties which normally have a different period of growth is practicable in the cooler pea-canning sections, but has not been profitable in regions such as the Eastern Shore, because the longer season varieties do not make satisfactory yields under the high temperatures that normally occur. Every careful observer has noted that the more fertile spots in a field mature the later and produce higher yields, but if all other factors are kept constant, even slight increases in temperature may hasten maturity and reduce the yield considerably.

The Experiment Station has carried out experiments on the date of planting peas for four years which have given quite consistent and valuable results. Since the details of the experiment are published elsewhere* they will be omitted here, to save time and space. If there are any questions, however, they will be gladly answered. Let us turn now to the results of these studies.

In 1922 Nott's Excelsior was grown. Six plantings were made at the intervals shown in Table I., and the peas were picked repeatedly as for the market. The last two plantings

*Loc. Amer. Soc. Hort. Sci. 162-168, 1926.

were so poor that only one picking was made. Notice that the last plantings came up in only half the time required for the first. There is nothing surprising in that, but it shows what happens to a good part of the spread that is lost between planting and harvesting. It is well known that pea seeds germinate more quickly in a warm soil than in a cold soil, but notice how much more quickly the later plantings blossomed. The sowing made April 4th blossomed in twenty-eight days from the time the plants were up; the one made nine days later required only twenty-two days to blossom; and the last sowing attained blossoming in only nineteen days. It will be seen in the next column that the temperature under which the later plantings developed was successively higher; and the higher the temperature, the more quickly the plants bloomed. Since the peas were picked from these plants more than once, it is not possible to point out a definite number of days from "blossoming" to "harvest", but the later plantings developed much faster.

Consider now, Tables II. and II., for 1925 and 1926. The Alaska was grown, and the peas were harvested all at one time as for the cannery. The season of 1925 opened very cool, remaining so for but a short time. It warmed up very early and was decidedly the hottest of the four seasons in which the experiments were carried on. The seedlings were up much quicker than the previous season, but unfortunately we do not have the temperature records for that period of the growth of the plants, so cannot say whether temperature was much of a factor or not. Certain other differences doubtless played a part. Notice that the mean temperatures under which the first five plantings attained blossoming remained fairly constant and were below 60°F, with one exception. The time required for these plantings to reach blossoming varied from thirty-two days for the one planted March 28, to 30 days for the one sowed April 23rd—a very small difference. The plot planted on March 6th, however, blossomed in a much shorter time than those above, blossoming in only twenty-two days, while the planting made on May 13th, blossomed in only nineteen days.

The difference in temperature under which the first five plantings attained blossoming was very slight, difference of less than one degree between the various means, in most cases. This probably accounts for their blossoming in so nearly the same time. Notice, however, that the temperature for the May 6th planting was much higher than any of the others, an increase from 59.1° to 66.8°; while the mean temperature for the May 13th planting was still higher—73.7°.

The season of 1926 did not warm up so much as did that of 1925. The early temperatures to blossoming were higher, varying from 59.4 to 63.9 for the first five plantings, but were not appreciably higher than this for the later plantings. The temperature was more uniform than in 1925 with the result that there was less difference in the time required for the first and last plantings to reach blossoming. The last planting in 1925 blossomed in nineteen days, the first in thirty-two; the last in 1926 blossomed in twenty-one days, the first in twenty-nine.

It is not claimed that temperature is the only thing affecting the time required to attain blossoming, for it is well established that the length of day has much to do with it. This is borne out in the figures for 1926, wherein it is shown that even though the temperature happened to be nearly the same for the various plantings, the later plantings blossomed in a successively shorter time.

Somewhat the same thing happened in regard to the period of time required for the pods to develop as occurs in the attainment of the blossoming stage. The later the peas are planted the higher will be the temperature under which the pods develop from the blossoming to the harvest stage, and the more rapid will be this development. Table II. shows that as the mean temperature from blossoming to harvest increased from 68.2° to 76.4° the time for development decreased from twenty-eight to eighteen days for the first and fifth plantings respectively, made March 28th and April 23rd. In 1926, Table III. shows that the time of development is decreased from twenty-nine days for March 29th planting under a mean temperature of 64.7° to twen-

ty-eight days for the April 24th planting under a temperature of 65.6°. Thus, the April 23rd planting in 1925 reached harvest stage from blossoming in ten days less time than the corresponding planting in 1926. Why? Because the temperature was so much higher, 76.4° in 1925 and only 65.6° in 1926.

Why are we laying so much stress on this point of rate of development? Because we want to emphasize that in warm sections of the state it is not practicable to try to secure a spread in the harvest by planting on different dates. It would require planting on widely separated dates to secure a reasonable spread, for as planting is delayed the time required for the crop to reach maturity is so decreased that the later planting is ready at almost the same time as the earlier one. However, there is an even more important point to be brought out in connection with late planting.

Effect of Temperature on Yield

It has been shown that the rate of attainment of a given stage of development is greatly increased by a rise in temperature. That in itself might not be a great disadvantage, if the *amount of growth* kept pace with the *rate of maturity*. This is not the case, however; high temperatures depress the amount of growth very markedly.

Effect on Size of plant:

In plantings subjected to high temperature the blossoms appear at an earlier age, when the plant is smaller, than in plantings developing under low temperature. Vegetative growth is much less with the result that little bearing area is available, whereon flowers may be produced. After the first two or three flowers are formed, vegetative growth in the latest plantings practically stops, and the plant reaches maturity undersized. This result was so extreme in 1925 under the high temperatures of that season that the plantings of May 6th and 13th attained a height of no more than six to eight inches, and set so few pods that it was considered not worth while to harvest them.

Effect on Setting of Pods:

Data were secured in these experiments that shows that high temperature not only reduces the size of plant, and therefore the area whereon blossoms may be borne, but also has a harmful effect upon the setting of pods. The yield in 1925 was reduced much more than could be accounted for by the decrease in the size of the plants. Thus we find two harmful effects combining to reduce the yield: (1) Reduction in size of plant and number of blossoms, (2) Reduction in percentage set of the blossoms which form.

Effect on Yield:

The results set forth in the last columns of Tables I., II., and III., indicate the yields of peas in grams per plant and are self-explanatory. The decrease in yield (or increase in a few unusual cases) accompanying delayed planting, is correlated very closely with the temperature conditions under which the plants developed. The most rapid decrease in yield occurred in 1925, the season in which the temperature increased the most. A delay of only eleven days from March 28th to April 8th resulted in the yield being reduced practically fifty per cent. On the other hand, in 1926, a delay of almost a month made little difference, because it so happened that the temperature conditions changed very little. A grower may "get by" with late planting in a cool season, but weather cannot be forcast at long range. We can't know whether a season will turn out to be cool or hot, so it pays to play safe and plant as early as practicable.

Experiments Confirmed by Field Results:

How does all this work out in practice? An extensive and careful survey of the fields of more than a hundred growers in Maryland, for two years, has shown that the conclusions drawn from these experiments are correct. Significant differences in favor of early planting have been found in spite of the great variation in soil fertility and production methods on different farms. The survey also shows that the late plantings mature considerably faster than the early ones.

Discussion

The objection has been raised that if all growers planted very early, as these results show is desirable, all the crop would reach harvest about the same time, causing great congestion and loss. The objection is invalid for two reasons: (1) all growers cannot plant at the same time because all fields in which peas are to be grown for a certain factory or market cannot be made ready equally early, (2) even if it were possible to plant the entire acreage in some section within two or three days, differences in soil conditions would still give a fair spread in harvest range. The more fertile fields will require longer to attain maturity than the less fertile fields. For example, two different growers who planted on the same days harvested their peas a whole week apart.

Grower No. 1. 64 days to harvest, yield 1 ton per acre.
Grower No. 2. 71 days to harvest, yield 1.35 tons per acre.

Thus, time of planting is not the only important point, by any means, but what we wish to emphasize is that if soil and seed are the same, the early planting has the advantage. Planting on different dates widely enough separated to give a good spread in harvesting usually results in greatly reduced yields. Variation in soil conditions is great enough to give a good spread, and this spread is greater when the planting is early than when it is late. There is apparently everything to gain and nothing to lose by early planting.

Effect of Temperature Upon Quality:

Dr. Appleman, of the Maryland Experiment Station showed several years ago, that the ripening process which is most probably responsible for the decrease in quality of sweet corn, consists of the change of sugar to starch, and that it is the ratio of sugar to starch which is of more importance than the content of only one of these substances without reference to the other. He further showed that this process is greatly hastened by increase in temperature. Chemical analyses of peas shows that the same type of changes occur

that Dr. Appleman has shown in sweet corn. Our studies in these experiments have shown that the rate of maturity is increased by high temperature.

At the present time it appears that the main effect of high temperature upon the quality of peas is rather an indirect effect accompanying a very rapid rate of maturity. Peas mature so fast in hot weather that the canner and grower may be caught unawares, and the peas are ready for harvest before adequate preparations have been made for harvesting them. It often happens that the harvest range is so shortened that the available equipment is inadequate for handling the crop before the ripening processes have proceeded too far for best quality.

Investigations are under way to determine more definitely what the influence of temperature upon quality is.

TABLE I

Rate of Development and Yield of Nott's Excelsior Peas, Grown and Harvested as for the Market, 1922

Date Planted	Days to "up"	Days from "up" to Blossoming	Mean Temp. from "up" to Blossoming	Mean Temper. Blossoming to Harvest	Grams Peas Per Plant
4— 8	14	22	61.4	63.2	5.6
4—17	14	22	63.1	64.7	3.9
4—24	10	22	64.5	67.3	3.0
5— 1	8	21	64.0	67.6	3.0
5— 8	8	28	64.6	69.5	2.1
5—15	7	19	67.1	69.1	2.3

TABLE II

Rate of Development and Yield of Alaska Peas Harvested for the Cannery, 1925

Date Planted	Days to "up"	Days from "up" to Blossoming	Mean Temp. "up" to Blossoming	Days from Blossoming to Harvest	Mean Temp. Blossoming to Harvest	Grams Peas per Plant
3—28	12	32	58.8	28	68.2	4.56
4— 2	10	31	58.8	27	69.3	3.21
4— 8	8	31	58.9	24	70.6	2.30
4—15	8	30	61.2	19	72.6	1.69
4—23	5	30	59.1	18	76.4	1.16
5— 6	7	22	66.8		No Harvest	
5—13	7	19	73.7			

TABLE III

Rate of Development and Yield of Alaska Peas Harvested for Cannery, 1926

3—29	16	29	59.4	29	64.7	2.82
4— 3	13	28	60.4	28	64.6	4.35
4— 9	12	26	63.1	28	66.1	3.67
4—16	12	24	63.3	27	66.1	3.64
4—24	11	23	63.9	28	65.6	3.93
4—30	8	22	64.0	23	68.3	2.90
5— 8	8	21	63.3	22	70.5	2.24

Reports from the standing committees were read and approved. Officers elected for the ensuing year were as follows:

President .....G. R. COBB,
Salisbury, Maryland.

Vice-President .....B. I. SPARKS,
825 East 33rd St.,
Baltimore, Maryland.

Secretary-Treasurer .....W. R. BALLARD,
College Park, Md.

Members of the Executive Board

A. M. TODD,
Sparrows Point, Md.

R. T. MERRITT,
Colgate, Md.

ROLAND N. PHELPS
Brooklyn, Md.

Director for Maryland Agricultural Society and Maryland Farm Bureau Federation .....B. I. SPARKS,
Baltimore, Md.

Delegate to Annual Meetings.....W. R. BALLARD,
College Park, Md.

Director for Agricultural Corporation....JAMES W. DAVIS,
Rocks, Md.

REPORT

OF THE

Tenth Annual Meeting

OF

Maryland Sheep Growers' Association

Baltimore, January 4, 1928

The tenth annual meeting of the Maryland Sheep Growers Association was held in the main dining room of the Rennert Hotel on Wednesday, January 4th, at 10 o'clock. About 30 members and others interested were present.

In the absence of the President, Senator Humphrey D. Wolfe, the meeting was called to order by Secretary K. A. Clark.

THE SECRETARY: Gentlemen, since the hour has arrived for this meeting to begin, and since our president, Senator Wolfe has not yet arrived, I am taking the liberty, with your permission, of calling to order this Tenth Annual Meeting of our Association.

The first order of business is an announcement which Mr. Carmichael wishes to make.

MR. CARMICHAEL: You will all recall with a great deal of pleasure the banquet tendered last year by the Baltimore Union Stock Yards Company to the members and friends of the Maryland Sheep Growers Association. It gives me pleasure to announce that the Stock Yards Company has invited for their guests on a similar occasion this year, the members and friends of the Maryland Swine Growers Association. I therefore wish to extend to each of you an invitation and urge you to attend their banquet for us to-

morrow night in the dining room of the Stock Yeards Hotel at 6:30 o'clock.

In the meantime, Senator Humphrey D. Wolfe, President of the Association arrived and took the chair.

ADDRESS OF THE PRESIDENT

BY SENATOR HUMPHREY, D. WOLFE, Glenwood, Md.

Gentlemen and Fellow Members of the Sheep Growers' Association of Maryland:

I want to congratulate you on your attendance and interest in this meeting. I consider my indentification with this organization as being among the most important duties I have. I have been raising sheep all my life. During all these years I have experienced many changes in the livestock business. At the present time, hogs are very low in price and cattle are very high in price. Sheep, as for several years past are high in price and showing excellent returns to farmers. Sheep have always paid better on the average than other classes of livestock. Last year my brother had 43 ewes to lamb 73 lambs. He did not lose a single lamb at lambing time and the only lamb to die before they were weaned was hung in the fence. His flock, like all well managed flocks, has paid very well.

I can notice a great improvement in our flocks since we have been using better rams. The class of rams in service nowadays is far superior to what it was years ago. I keep only grade ewes but use purebred rams as I think everyone should. All my lambs are docked and castrated. It is easy to notice the great advantages of this practice. The wether lambs improve with age instead of becoming thin and leggy from riding one another and committing disturbances in the pasture.

Concerning the parasite troubles I have had on my farm, will say that the stomach work infestation was so bad in my flock 3 years ago that I did not market a single decent lamb. My lambs died like flies. I became so disgusted I was almost ready to sell out and start over again, when I learned of the copper sulphate treatment. Since that time, I have

been using it with excellent results and can recommend it most highly.

Maryland produces about 100,000 lambs annually. Most of these are trucked to the Philadelphia, Baltimore and Washtington markets. My own lambs go direct to the butchers in Baltimore. I will conclude by saying that I always enjoy being with you in these meetings and doing whatever I can to advance the interests of the sheep men in our State.

I will introduce Mr. K. A. Clark, Secretary-Treasurer, who will give the report of the activities of this Association for the year just past.

REPORT OF THE SECRETARY-TREASURER

By K. A. Clark, College Park, Maryland.

Mr. Chairman and Members of the Association:

Unless you especially request it, I shall not take the time to read the minutes of the last meeting, because our time is short and they have been in your hands for some months past.

Our Association, during the year just past, has been more active than ever before. The year was started with a bang at the last annual meeting. The event referred to was the splendid banquet given our members who were guests of the Baltimore Union Stock Yards Company on that occasion. About 50 members and friends of the Association were present.

Almost as soon as the last annual meeting was over, a vigorous lamb improvement campaign was started by the Extension Service of the University of Maryland. The speaker, as animal husbandry specialist in charge of this project, conducted 48 lamb docking and castrating demonstrations in 19 different Maryland counties. Stomach worm demonstrations were held in conjunction with those on docking and castrating. The part played by this Association in this work was the purchase and distribution of materials for treatments. Over 250 packages of treatment were purchased and distributed. Eighty of these were sold at 30 cents each. The balance were used for educational and

demonstrational purposes. The cost of these items to this Association was $17.85.

Two purebred ram sales were held. The College Park sale, held on Livestock Day, the 14th of May resulted in the sale of 12 rams at an average of $29 per head. The Centerville sale was held on July 12th. It resulted in an average of $38.50 on 27 head. The 12 head sold in the first sale were all Hampshires. In the Centerville sale, 13 head were Shropshires, and 14 head were Hampshires. All sales were for cash. Most of the rams were consigned by the breeders and put through the sale at their own risk. The rams in College Park sale were consigned by Mr. D. F. Oland, Olney, Mr. G. B. Fenwick, Glyndon, Mr. W. S. Chichester, Aquasco, Dr. C. H. Conley, Frederick, Belair Farms, Collington and Butterworth Farm, Brandywine. The rams in the Centerville sale were consigned by Dr. C. H. Conley, Frederick, Mr. W. P. Evans, Pocomoke, Mr. G. B. Fenwick, Glyndon, Mr. A. C. McCardell, Frederick, Mr. H. P. Miller, Grantsville, Mr. John E. Muncaster, Jr., Rockville, and the Animal industry Farm, Beltsville. The sales were conducted by President Wolfe who donated his services.

This Association, working with the Maryland Swine Growers Association, maintained a tent at the Timonium Fair. The speaker was in charge and was prepared to offer assistance to sheep and swine exhibitors. A reading table was supplied with periodicals and bulletins. A supply of drinking water was kept for the conveninece of the livestock exhibitors. The tent was furnished through the courtesy of Mr. W. R. Harvey, President of the Maryland Swine Growers Association and Director of the Fair in Charge of the Sheep and Swine Department.

This Association offered two trophies on pens of Hampshire and Shropshire lambs at Timonium. These cups are annual cups until they have been won by the same exhibitor three times, at which time they become his permanent property. The Hampshire trophy was won by Mr. William Hines, of Brighton, Maryland. The Shropshire trophy was won by Hr. Hobart G. Hutton, of Brighton, Maryland.

Our membership for the year was 56 members. In 1926, there were 79 members. In 1925 there were 26 members. In 1924, there were 17 members. Our membership could be considerably increased. We ought to have 100 members.

The wool taken from the rams put in the ram sale in 1926, was sent away for manufacture into blankets. Three of the blankets were stolen, the other 27 were sold for $11.00 each.

During the year monthly News Letters were sent out to all the members. In all, about 1,200 letters were distributed.

The records show that all bills of the Association have been paid and that there is a balance of $139.27 in the bank.

I suggest, Mr. Chairman, that a committee be appointed to audit the books and ascertain their correctness.

MR. HINES: Mr. Chairman, I move the treasurer's report be accepted without audit. (Seconded and carried.)

MARKET REQUIREMENTS OF LIVE SLAUGHTER LAMBS

BY L. B. BURKE,
Marketing Specialist, Bureau of Agricultural Economics.

The market requirements for live slaughter lambs are essentially the same in meaning as the requirements of those who eat lamb meat. In other words, the buyers of live lambs for immediate slaughter must have in mind the kind of chops, legs and loins required by the consumer if they are to conduct a profitable business. Likewise, the producer must know the consumer's desires and be able to see through the fleece and determine when his lambs have reached the stage that is in demand because at that point the lamb is most valuable under present market practices, and will usually bring the highest market price.

In discussing this subject, it is necessary to consider some of the reasons why certain customers select lamb at times for their meat dish instead of pork, beef, veal or poultry.

Besides the fact that lamb meat has a taste that is rather universally liked, and different from other meat, it is very tender and, if of high grade, is attractive in appear-

ance. The appearance alone often sells an article and that is true of meat.

Lamb producers should realize that all the different kinds of meat are competing with lamb and that appearance is often the point that decides the customer to buy. They should remember that when lambs are marketed with little finish they do not make attractive carcasses.

The same holds true with the appearance of live lambs. Those that are docked and castrated, other characteristics being equal, almost invariably sell higher because they present a better appearance.

The quantity of meat in proportion to bone in a lamb chop is also a factor which influences the consumer. If the lamb is very thin in flesh-and-fat condition, the eye of the chop is very small and unattractive, but if the lamb is large and covered with a moderately thick layer of pinkish-white fat, the chops from it are often preferred to other meat even at a considerably higher price.

This fact can best be illustrated with the use of two lamb chops purchased at a local butcher shop. The lamb chop marked A was taken from a choice grade lamb and B was taken from a common grade lamb. Note the bright pink color of the lean in A, the even covering of pinkish-white fat, and the very large quantity of edible meat to the amount of bone. Contrast with this the extremely small eye, the darker red color of lean, and the absence of fat covering of B. In addition to the unattractiveness of the lower grade, the keeping qualities are not as good, therefore, the spoilage is usually greater. The characteristics in the rib cuts I have used are shown in a different form in the colored photographs of carcasses I have here.

The retail meat dealer must be able to judge his meat by looking at the carcasses, otherwise he would be unable to conduct his business on a profitable basis.

In order that the contrast be made as great as possible, I wish to call your attention to only the choice and common grades, which have been worked out by the U. S. Bureau of Agricultural Economics.

Choice or No. 1 grade lamb carcasses have excellent conformation, finish, and quality. They are relatively short and compact; with thick broad backs thick full loin and ribs, and thick and plump short legs. The outer covering of fat is moderately thick, smooth and well distributed and is white or creamy white in color. The fat covering is interspersed with thin strips of pink flesh over the sides and a more even distribution over the lower limits of the breast and flanks. Interior fats are plentiful in the crotch and over the kidneys, but not excessive. The bones are relatively small and soft, and are tinged with blood. The break joint of the fore legs shows four smooth, moist, well-defined, red ridges.

Common, or No. 4 grade lamb carcasses are angular and have poor conformation or shape, finish, and quality. All bones are prominent and the back bone is plainly visible from neck to tail, denoting a thin covering of meat. There is little or no exterior nor interior fat covering. The heavier and older carcasses frequently have small patches of bluish-tinged fat in the regions of the kidneys, but this fat does not materially help the appearance or keeping qualities of the carcass. The bones are usually soft but do not have the redness of the higher grade lambs. Because of lack of finish the flesh is soft, spongy and inclined to be watery. It appears coarse and fibrous, and dark pink or a slight brownish tinge in color. Carcass weights vary widely and range from 15 to 40 pounds, but usually are between 25 to 35 pounds.

All of this is more or less indirectly related to your problem. The grades form a basis of value which in the end determines quite largely the price the buyer will pay for live lambs.

You, of course, are interested in the characteristics of the kind of lambs that sell at the top of the market and how to produce lambs with such characteristics. You are also interested in how to detect the lower grade lambs and to reduce their number to a minimum. In a general way, each can be judged by examining with the eye, but a more accurate method is to feel the animal with the hand. A

fat, plump animal will be well covered over the back and rump; but the bones of a thin animal's shoulders, back and rump will be very prominent. To point out more clearly the characteristics of a market-topping lamb, and one which is not desirable, I will describe the differences between a choice and common grade lamb.

Conformation—The conformation or shape of a choice lamb, when viewed from the side, is rectangular but when viewed from the top or rear is more or less cylindrical. It is compact, being wide and deep in proportion to its length. The top and under line and the lines of the sides are straight and nearly parallel.

The comparatively short legs are set wide apart giving the animal a blocky appearance. The neck is short but thick, indicating large muscular development. It is free from excessive folds and blends smoothly with the shoulder on both top and sides. The shoulders are wide, but smoothly covered on sides and top, blending evenly with the ribs without a tendency to show prominence of shoulder blades. The ribs, back, and loin are almost as wide as the shoulders, giving a full appearance from shoulder to hips. The belly or paunch is even with the chest and rear flank but is very little wider than the shoulders and thighs.

The hips are smooth and no wider than the rest of the body, but are thickly covered. The rump is wide and filled with flesh, rounding smoothly from hips to tail head.

The tail head is nearly even with the back line but on either side may be slightly too fat or patchy. The flanks are very low and full, and the lower part of the thigh is plump and thick, and bulges slightly at both side and rear. The twist is low and dull.

Finish—The finish or fat covering is thick and uniformly distributed over the shoulders, back, loin, ribs and hindquarters. Slightly excessive finish may be permitted in the choice grade.

Quality—A choice grade slaughter lamb has fine hair, common bone and joints. The features of the head and shoulders are fine and smooth. The thick fat and muscles are firm, yet elastic to the touch. Hard or soft rolls of fat are

undesirable and indicate that the carcass will lack uniformity and cut with considerable waste.

A common grade slaughter lamb may be common in conformation, finsh and quality, or it may be of good type and quality but not fat enough to be classed in the medium grade, as a slaughter lamb. The good quality lambs that are thin in flesh are frequently classed among the better grades of feeders. Common grade lambs may be very coarse and rough and resemble the dairy type of cattle in conformation. Their pelts may be heavy and have many folds.

The conformation of a common grade lamb, when viewed from the side, is irregular, being heavy in the shoulders, low in the back, high in the flank with a high, coarse or droopy rump. The legs are usually too long considering the depth of body. Viewed from the top or rear the body is generally narrow throughout with a general lack of flesh covering. The rump is deficient, the thigh is thin, and the twist is high.

It is usually rangy, being narrow and shallow in proportion to length of body. The top and under lines and the lines of the sides are irregular and oblique.

The animal is thin throughout the body and may be rough and uneven. It is frequently very coarse in quality and the flesh is soft and undesirable. Lambs that are black, brown, or of other undesirable colors, indicate inferior or mixed breeding and if they are very thin in flesh are usually placed as low or lower than this grade.

The finish or fat covering is very thin over the body.

The quality of bone and hair of a common grade slaughter lamb may be very fine or very coarse. The head and shoulders may be large and coarse and the flesh is invariably soft. About the only redeeming feature of a common grade lamb is the size of the leg cuts in the carcass. On account of the light weight this cut frequently sells at a fair price.

A lamb that is too heavy for the trade is often discriminated against and producers should keep this point in mind when producing the better grades. In most retail shops it is the custom to sell a single leg in one piece, and not cut it to suit the customer as with other meat. With large

lambs weighing 90 to 110 pounds the average size leg will weigh 8 to 9 pounds and at 40 to 50 cents per pound it costs more than the consumer desires to pay. They prefer a five to six pound leg and for that reason will pay a higher price per pound for it. The producer, therefore, in finishing his lambs should estimate in advance how much his lambs will weigh when finished and keep them under 85 pounds if possible.

To summarize, the better class of trade which perhaps consumes the bulk of the lamb meat, requires lambs of the proper size, that are thick, meaty animals, with a smooth, thick covering of fat. A steady supply of such lambs will more often fill the requirements of the trade than will any other kind.

AVOIDING CULL LAMBS AT MARKETING TIME

By Professor W. E. Hunt,
College Park, Maryland.

Gentlemen and Members of the Association:

To a group of sheep men such as is assembled here, it will not take much argument or detailed presentation of figures, to prove that for the past few years sheep and lamb production has been one of the most profitable farm enterprises.

The "golden hoof" has truly lived up to its reputation. Because of its profit making ability, the sheep has won many new friends in Maryland during the last few years and undoubtedly will win many more in years to come. In fact, sheep have been so profitable of late that sheepmen generally, especially in Maryland, have been blind to certain leaks in profits, which in more strenuous times would eliminate most, if not all, of the margin of profit.

The condition and quality of the lambs arriving at the various markets from the farms of the State, is perhaps, the best barometer of the efficiency of our flocks and shepherds. Even a casual observation suggests that the proportion of prime, choice and good lambs is far below what it should be. Common and cull lambs are entirely too numerous. This fact was forcibly brought to our attention recently

when 75 lambs were required for an experimental project at the University of Maryland Experiment Station. Fancy (prime) lambs were not wanted necessarily, but it was desirable to obtain for purposes of this experiment, lambs which would grade about good to choice. I am sure that few realize the great amount of searching that was necessary to find suitable lambs, even in counties which pride themselves on the fertility of their soil, the numbers and quality of their livestock, and the prosperity of their people. The cull lamb is actually a problem in Maryland and is costing Maryland sheep men many thousands of dollars annually. If the number and proportion of high-class market lambs could be materially increased and the cull lambs avoided, sheep in Maryland would be even more profitable. I am sure that all are interested in the profits from the flock.

Some very interesting experiments have been conducted at several of the state experiment stations in an attempt to learn some of the causes of cull lambs. Most of these experiments are applicable to Maryland conditions, and have in their results valuable lessons for Maryland producers.

There have been many comparisons of good and poor sires. There is really no excuse for any producer of market lambs using anything but a purebred ram. His value in dollars and cents and mental satisfaction has been proven time and again. But even in the face of such evidence, the proportion of Maryland producers who use purebred sires is surprisingly low. Census figures show about 4,000 farms in Maryland keeping sheep. On these 4,000 farms, there are not 400 purbred rams, either registered or eligible to registry. Less than 10% of the farm flocks of the State are headed by purebred sires. Is it any wonder that Maryland produces so few good and choice lambs?

The ewe flocks of Maryland also show a lack of good breeding. The commercial ewe flocks of this State are very plain in quality. The common farm ewe is indeed a very common ewe. Too many Maryland ewes are long legged, long necked, shallow bodied, small boned, bare bellied and open fleeced, instead of short legged, deep, broad, com-

pact, blocky and symmetrical in form, thick fleshed and strong boned, and well covered with a fine, dense, uniform fleece. The use of purebred sires would completely change the type and quality of our ewe flocks in two generations. The best way of improving our ewe flocks would be by saving the best ewe lambs from purebred sires for flock replacement purposes.

The first step, therefore, in reducting the number of cull lambs at market time, is the use of a purebred ram of good type and quality.

The Ohio Experiment Station, in considering the cull lamb problem, has conducted experiments to find out whether a lamb is born or made a cull. Their results emphasize the second important factor causing cull lambs. For this experiment, 19 cull or "skip" lambs were purchased at the Cleveland Stock Yards. They were an extremely thin, pale skinned, shaggy wooled, listless lot of lambs, averaging 52 pounds in weight. They cost $7 per 100 pounds when $14.50 was the prevailing price for good lambs. These lambs were taken to the Ohio Experiment Station at Wooster, and were put on a preliminary feeding of legume hay, oats and bran. They were continued on this ration approximately six weeks and treated 4 times for stomach worms, using the copper-sulphate solution and dipped once for ticks. Following this, they were put on a fattening ration of a full feed of shelled corn and alfalfa hay with 0.15 of a pound of linseed oil meal daily per lamb. The rate and enconomy of gain while on feed was practically the same as for good feeder lambs. At the close of the fattening period the lambs were valued at $16.25 per cwt., which resulted in a profit over feed cost of $7.11 per lamb. This experiment shows that neglect on the part of the producer was the chief factor responsible for these lambs being classed as cull lambs and thus bringing only $7 per hundred pounds.

Proper feed and care would have made these lambs good or choice lambs. Many Maryland lambs suffer from neglect and poor feeding. It is very difficult even to approximate the annual loss from these causes, but it is safe to say that in many instances it practically wipes out all profits

from the flock. Too many Maryland ewes are forced to live on corn stalks and timothy hay in winter and sparse pasture, hardly worthy of the name pasture, during the summer months. When forced to live on such feeds it is all the ewe can do to exist, to say nothing of producing choice or good lambs for market. Feeding of legume hays, corn silage, linseed oil meal and shelled corn in the winter and providing forage lots of wheat, rape, soybeans, sweet clover and using meadow aftermath during the summer, will materially assist in reducing the number of cull lambs caused by neglect and poor feeding.

At the Minnesota Experiment Station an attempt was made to diagnose the causes of cull lambs. The objects of this experiment were, first, to determine to what extent cull lambs arriving on the St. Paul market, were infested with stomach worms; second, to diagnose other causes of unthriftiness in these cull lambs; third, to determine the response of these cull lambs to feed.

Fifty-two cull lambs were purchased on the St. Paul market, the lambs selected all showing evidence of infestation with internal parasites. They were treated for stomach worms and then put on fattening rations. After being on feed one month the strength and thrift of the lambs was remarkably improved and their rate and economy of gain was very satisfactory. There was, however, considerable variation in the total gain per lamb over the 80 day feeding period. The daily gain per lamb varied from .05 pounds per day to .66 pounds per day for the 80-day feeding period. Because of this variation in the response of individual lambs, an attempt was made to find the cause of the failure of some lambs to respond to good feed.

When first put on feed, all the lambs were graded according to their feeder conformation and quality and indications of good breeding. The cause of the variation in response of individual lambs to the rations used seemed to be their feeder conformation and quality rather than differences in parasitic infestation. All of the lambs purchased were selected because of poor conformation and extreme emaciation, but even though they were all cull lambs, it was only

the narrow chested, shallow bodied lambs that failed to make satisfactory gain on feed. The report of this experiment contains the following paragraphs which have particular bearing on the problem as present in Maryland.

The cause of the variation in the response of individual lambs to the rations used, seems to be the feeder conformation and quality of the lambs themselves, rather than differences in parasitic infestation. All of the lambs purchased were selected from lambs culled out at the South St. Paul market because of poor conformation and extreme emaciation. But even though they were all cull lambs, it was only the very poorest of them that failed to make satisfactory gains when fed any one of three standard rations.

"This suggests that, in addition to the prevalence of internal parasites in farm raised sheep, two other factors are associated with the poor condition and lack of thrift so common in native sheep, and that possibly these two factors are of more importance in this respect than is generally believed. If farmers would pay more attention to the breeding and the feeding of their flocks, there is little doubt that the proportion of cull lambs among native sheep coming to market would be substantially reduced.

"There is no doubt that internal parasites, especially stomach worms, are responsible for a great deal of the unthriftiness and poor condition of farm raised sheep, and they are indeed a serious problem. But the results of this trial seem to indicate that good feeding and good breeding will go a long way towards overcoming their effects. Poorly fed sheep succumb to the attacks of internal parasites more readily than well fed sheep. If poorly fed sheep escape parasitic infestation, because of lack of condition, they are of low market value. Poorly bred sheep, because of lack of constitution, feeding capacity and quality do not make satisfactory gains even when an abundance of good feed is provided. Twenty per cent. of the lambs used in this trial were cull lambs because of poor breeding, as indicated by general appearance and decidedly inferior conformation. Eighty per cent. were cull lambs and evidently from lack of feed. The eighty per cent. made good gains and fin-

ished out in a salable and attractive product. The packer buyer pronounced their carcasses as ideal, but a trifle heavy, and paid within two cents of the existing top of the market for the entire lot of carcasses. The other 20 per cent. were still cull lambs at the end of 110 days of feeding, their carcasses were cull carcasses, and they sold for little more than half the price per pound received for the 80 per cent.—convincing proof of the value of good breeding, coupled with good feeding.

"Closer attention paid to breeding and feeding will not only materially increase the returns from the flock at hand by doing away with culls caused by these two factors, but will also tend to reduce losses from internal parasites, for the chances are that the farmer who is sufficiently interested in his flock and the profit obtained from it, to carefully consider its breeding and feeding, will not fail to practice a system of management that will effectively control the parasite problem."

Maryland producers are fortunate in respect to climate and market. Because of nearness to market, local slaughterers prefer Maryland lambs to lambs of equal quality coming from distant points. The demand for lambs in Maryland and nearby markets far exceed the local production. The chief handicap under which Maryland lamb producers are working, is lack of quality. There is a good opportunity for lamb producers who are willing to give their sheep the attention necessary to produce good and choice lambs. The proportion of good, choice and prime lambs coming from Maryland farms can be materially increased if producers will pay more attention to the breeding of their flocks and use good, purebred sires, feed their ewes and lambs properly and control internal parasites.

MR. HARVEY: Purebred rams cannot be recommended too highly. About 58 purebred sheep changed hands at Timonium this year. That is a splendid thing.

There has been some suggestion that the Maryland Swine Growers Association and the Maryland Sheep Growers Association and perhaps others, be united to form one livestock association. I suggest that the President and Secretary

of this Association act with a similar committee from the Swine Growers Association to study out this proposition and if they consider it favorably, to work out proposed details for the new organization.

PRESIDENT WOLFE: Gentlemen, this is a very important matter. I believe it calls for the best thoughts and efforts of many minds. With your permission I would like to appoint two additional men on that committee. I name Mr. W. S. Chichester and Mr. R. C. F. Weagly. All in favor of the committee as appointed, approve by saying "aye." (Approved).

The nominating committee gave the following report: We have met and wish to nominate the following officers for the coming year:

President .....HON. HUMPHREY D. WOLFE
Vice-President .....MR. E. L. THOMAS
Secretary-Treasurer .....MR. K. A. CLARK

Executive Committee

MR. JOS. M. MATTINGLY
MR. CHAS. T. COCKEY, JR.

Delegate to Farm Bureau Meetings..MR. JOS. M. MATTINGLY

Director of Maryland Farm Bureau
HON. HUMPHREY D. WOLFE

It was moved and seconded that the report of the committee be accepted and the officers elected.

THE PRESIDENT: Gentlemen, I wish to thank you for the honor you have conferred upon me. I shall do all I can to further the sheep industry. If there is no further business to come before this meeting, a motion to adjourn is in order.

REPORT

OF

Annual Meeting

OF

The Maryland Tobacco Growers' Association

Baltimore, January 5, 1928

The meeting was called by Hon. Wm. L. Marbury, who made a very able appeal for loyalty to the large gathering present. He also outlined in a general way the accomplishments of the Association in the past and its future plans.

The secretary's report, to be made by Mr. C. A. Duvall, was transferred to the Manager, Mr. Geo. I. Gardiner, after a short but pleasing address by Mr. Duvall.

Mr. Gardiner went very much into detail in his report as to the accomplishments of the Association, and he made a very able announcement that the Association was now in position to cut the selling cost on tobacco to its members to $2.00 per hogshead, which was received with great applause by the audience, not so much from the fact of this saving to them in the selling cost of tobacco, but the fact that it showed that the Association was in very good financial condition and that it was the policy of the Association to carry back to the members every cent that could be saved for them. He very forcibly brought to the members the condition of the tobacco market in the South, where the organizations failed to operate. He drew a very clear picture as to what would be the condition here if the Maryland Tobacco Growers Association should fail to operate. It was a clear and clean cut picture of what organization can and will do, and I certainly hope every member took back to the

country the messages delivered by Mr. Gardiner on the tobacco situation, and also the fertilizer situation, which is giving considerable trouble again this season.

Mr. Marbury then introduced Mr. J. G. Morrow, of the Federal Government, who gave a very detailed and educational talk and demonstration on the grading of Maryland tobacco, which is one of the most important things now to be considered by the farmers of Southern Maryland in this age and demand for cigarette tobacco, and it is very necessary that the suggestions and requests of Mr. Morrow be carried out.

Senator J. Allan Coad, recently elected vice-president of the Maryland Tobacco Growers Association, gave one of the best and strongest addresses ever delivered in Baltimore on service and coöperative marketing. In a clear and comprehensive way, he brought to the members of the Association the fact that the directors of the organization fully realize that service was not only necessary, but it was going to be the outstanding features of the Maryland Tobacco Growers Association in 1928.

One of the very important numbers to be delivered by Mr. W. B. Posey, on diseases of tobacco, on account of the lateness of the hour, had to be postponed for another meeting. This was very much regretted, not only by the management, but by all present.

Mr. Gardiner closed the meeting by telling the members he was going to give them the best advice they ever received in their lives, that it would not cost them one cent for the advice, but it would cost them hundreds of thousands of dollars if they did not take it, and that was that conditions at this time warranted the strongest coöperative support among all members to produce results in 1928. The meeting then closed, after it had been determined the meeting of the Maryland Tobacco Growers Association was the largest meeting ever held in Baltimore of the Association.

REPORT

OF

Fifth Annual Meeting

OF THE

Maryland Swine Growers' Association

Baltimore, Maryland, January 4, 1928

Although there had been some apprehension concerning the outcome of an attempt to hold the January, 1928 annual session as an evening meeting of the Maryland Swine Growers' Association at Baltimore during the time of the "January Meetings," the Dinner-Meeting held at the Union Stock Yards Hotel was a decided success judged by the attendance, friendliness, enthusiasm, and interest which were in evidence. Approximately 80 were in attendance. The Stock Yards Company officials and the management of the Union Stock Yards Hotel proved conclusively that they know how to "put on" a dinner for swine growers. There was an array of real food, with pork products of a half dozen or so different kinds as a dominant feature, and with the "trimmings" usually associated with holiday dinners. The delicious ice cream, each portion of which was frozen in the form of a sitting pig, was especially appealing. It was a delicious, abundant, enjoyable dinner and "A good time was had by all."

During the dinner, Mr. Depew Head, Director of Organization, Ohio Farm Bureau Federation, and formerly President of the National Swine Growers' Association, was introduced by President Harvey and gave a short talk, in which he expressed his pleasure at being able to attend the dinner and told of his interest in the problems which concern swine growers in Maryland and elsewhere. Mr. Head was unable to stay during the entire evening, on account of an

important conference which called for his being in Ohio on the following day.

After dinner had been finished, and before the regular program of the Annual Meeting was begun, Mr. J. H. Baugher, President of the Union Stock Yards Company, in a brief opening speech, voiced the pleasure of himself and of the Union Stock Yards Company in welcoming the members of the Swine Growers' Association and others as guests of the Company, and then called upon Honorable Wm. F. Broening, Mayor of Baltimore, who delivered an address which gave proof of his interest in things agricultural as well as in things which are of especial concern to the citizens of Baltimore City. Mayor Broening, though a busy man indeed, found time to travel out to the Yards, to dine with the company, and to deliver a thoughtful, friendly, inspirational address which was much enjoyed by his hearers. Following Mayor Broening's address, President Harvey took charge of the meeting. President R. A. Pearson, of the University of Maryland, was introduced by President Harvey.

ADDRESS BY PRESIDENT R. A. PEARSON OF THE UNIVERSITY OF MARYLAND

After greeting the group and commenting on his pleasure in being present, President Pearson called attention to the opportunity for swine producers in Maryland. He referred to the favorable climate and the wide variety of Maryland crops that may be utilized by hogs, and emphasized the advantages of being near to the best markets of the entire country.

He impressed his audience with the importance of scientific methods in swine production. He pointed out that a difficult problem in science a few months or a few years ago, is thoroughly understood and is being dealt with successfully by countless farmers because of the patient work

done by one or a few investigators. "The science of today is the common practice of tomorrow." Farmers who do not change their methods and make use of the information developed in the laboratories and in the feed lot and at the scales and in the slaughter house, will find themselves not standing still but going backwards because of the stream of progress moving by them.

He pointed out that Maryland's swine production should be characterized by the highest quality of animals; equipment that is correct in its essentials (that does not necessarily mean expensive equipment); and rations that are based upon careful analyses and feeding tests, and by the high quality of products that go to market. There is no good reason why Maryland pork products should not enjoy the highest reputation and command the highest prices in the markets.

Recent developments in reference to sanitation in hog production were pointed out. One county in Illinois has become famous throughout the country because of their emphasis on simple, cleanly practices, well understood by every farmer, but unfortunately not as widely adopted as should be the case.

Dr. Pearson told of his observations on Danish farms and how those farmers are getting good returns from their hogs, with their two large litters per year and coöperative bacon factories and their command of the English markets. The Danish farmers use one breed of hogs for their sows and another breed for their sires. These breeds are developed on farms definitely designated for the purpose. Carefully worked out plans are followed to determine the best breeding animals. Among the tests made are tests of the strength of bones. At a given age the hog is slaughtered and the strength of its bones are determined by being broken in a machine which registers the pressure necessary to break. The sires and dams of those animals having the best bones are accredited accordingly, and their progeny is valued accordingly. This is only one of the interesting things being done in Denmark in the interest of better hogs. Their whole complicated plan is made up of simple steps like these,

but all together represent a tremendous influence for better products and greater economy, and therefore more profits to the farmers.

President Pearson assured his audience that the University of Maryland in all its parts, desires to serve the people of Maryland in the best and most satisfactory way possible.

Dr. H. J. Patterson, Director of the Maryland Agricultural Experiment Station, and Dean of the College of Agriture of the University of Maryland, was next presented by President Harvey and briefly discussed in an interesting way, the importance of research in industry and in agriculture. He presented some rather startling and significant figures concerning the generous support which business organizations are providing for research along industrial lines, and called attention to the fact that business men do not regard the use of money for research as an expenditure, but rather as an investment which yields highly remunerative returns. Research in agriculture, it was pointed out, has yielded many important facts that have been of much assistance to the practical farmer, though there is much yet to do along this line in all branches of agriculture. Director Patterson stressed the need for an intelligent selection and use of feeds in pork production if best results are to be secured. He called attention to the high efficiency of improved types of hogs as transformers of farm grown commercial feeds into valuable market products. Director Patterson referred to the large number of attractive and palatable edible products which are yielded by swine, and, in a well-merited compliment to the hotel management, used as an illustration the variety of delicious forms in which pork products were served at the dinner.

Dr. T. B. Symons, Director of the University of Maryland Extension Service, was then introduced by President Harvey. Director Symons paid a high compliment to the Union Stock Yards Company upon the efficiency of their equipment. He urged swine growers to visit the Yards during daylight so as to become intimately familiar with the methods of handling livestock there, and to become acquainted with the men who are transacting business at the Yards.

He called attention to the active part which Boys' Pig Clubs have for years taken in the improvement of the swine industry of the state, and expressed the firm belief that the work which members of these clubs are doing deserves the thoughtful consideration and active support of all who are interested in the agricultural welfare of the State. Dr. Symons congratulated the Swine Growers' Association upon the successful establishing of the organization and upon the good attendance at this meeting and expressed his appreciation of the fine hospitality with which the Union Stock Yards Company banqueted the group. Dr. Symons assured the swine growers that the University of Maryland Extension Service is much interested in the work of their organization and always is willing and anxious to serve through every Extension agency at its command, in order to bring about not only the development of a more efficient, profitable swine industry in Maryland, but, what is more important, a higher standard of living and more prosperity and happiness in the country life of the State.

In taking up the regular program of the Annual Meeting, President W. R. Harvey next delivered a short address which follows:

PRESIDENT'S ADDRESS

By W. R. Harvey, Corbett, Maryland.

Members of the Maryland State Swine Growers' Association and Friends:

It is with great pleasure that I look out over this room and see such a splendid turn-out, not only of our members, but also of those interested in the swine industry in one way or another. Also, I am glad to see here so many men of great prominence in our State, and on behalf of the Association, I wish to bid them welcome.

The past year has not been one of very great promise to us as swine growers, but I think our present market is on a firm basis and that we can look ahead into the year 1928 with considerable encouragement. I have been connected with the swine industry in different ways, as a feeder, a buyer and shipper, an exhibitor of purebred hogs, etc., and my

experience through it all is that the men who stick firmly to the sow, and feed year after year, are the ones who have always made good. The swine industry is no place for a plunger or an "in-and-outer," he will sooner or later be forced out of it. There is every reason why Maryland farmers should feed out some hogs this year. Our land produces good corn, and we can grow any kind of forage for pasture, which is highly important in successful swine production; often the profit, whatever it is, comes from this part of the operation. Then, again, we are within a day's haul by truck or otherwise, of Baltimore, the best hog market on earth.

I think that, as an Association, we must, to accomplish our purpose, make plain some of the reasons just why it is to the advantage of the swine men in general to be one with us, and with this done, I am sure that we can easily have just double our present membership. There are many reasons why it is an advantage to be a member of this association; first, and, probably most important, is that here we have the discussion of different topics that are of vital importance to us. None of us have been in the business so long that we can afford to turn a deaf ear to the methods that are now in vogue among the successful feeders and breeders of swine. I would be very glad to see our membership increase at least 100%, and believe that this can be brought about if every member will do just a little, say bring in at least one new member, between now and our 1929 meeting.

On behalf of the members of this Association, I wish to thank the Union Stock Yards Company, through its President, Mr. Baugher, for their coöperation at all times, and especially for their hospitality here tonight. How could we possibly be better taken care of, and sit down to a better dinner? Mr. Baugher, we thank you!

I wish for every member present a prosperous year in 1928, and hope to see each of you here at our next meeting, accompanied by at least one of your neighbors interested in our work.

REPORT OF SECRETARY-TREASURER

By B. E CARMICHAEL.

Mr. President, and Members of the Association:

This report will be short. The activities of the Maryland Swine Growers' Association have been continued and somewhat extended during the year just closed. At the beginning of 1927, a successful meeting of the Association was held at Baltimore, with addresses by President W. R. Harvey, Corbett, Maryland; Dr. S. S. Buckley, of the United States Department of Agriculture; Dr. H. H. Havner, of Pennsylvania State College, State College, Pennsylvania; Dr. I. K. Atherton, Inspector in Charge of Hog Cholera Work and Farm Sanitation, College Park; and Mr. G. Carlton Oland, of Olney; winner of the 1926 Maryland Litter Contest. The attendance, interest, and discussion evidenced a lively appreciation of the importance of the subjects presented by the different speakers. During the year, monthly News Letters have been issued and sent to members of the Association and to some others; if there is a desire on the part of members of the Association for it, the Monthly News Letter will be continued. A beautiful silver cup was offered for the best pen of purebred pigs of either sex, bred and shown by a member of the Association at the Timonium Fair. Custody of the cup for one year is offered to the winner in this show, three winnings by the same exhibitor to result in permanent ownership of the cup. Mr. Joseph Hornberger, Jr., of Harford County, was the winner in 1927. Tent headquarters were maintained for Association members and others at the Timonium Fair, in coöperation with the Maryland Sheep Growers' Association.

The financial condition of the Association is set out in the following statement:

FINANCIAL STATEMENT

Receipts

Balance reported last meeting	$44.26
1927 dues collected after last meeting	28.00
1928 dues collected after last meeting	16.00
Total, balance and receipts	$88.26

Expenses

Engraving and lacquering contest cup	$ 2.50
Farm Bureau Federation	20.00
"Feeds and Feeding" as prize to contest winner	3.88
Cup for Timonium Fair Pen of Pigs Show	16.50
Water at Association tent, Timonium	3.00
Envelopes and printing	4.75
Total expenses	$50.63
Balance, cash on hand	$37.63

THE BALTIMORE HOG MARKET—ITS ORIGIN, DEVELOPMENT, AND REQUIREMENTS

By J. H. Baugher,
President, Union Stock Yards Company, Baltimore.

Mr. J. H. Baugher, President of the Union Stock Yards Company of Baltimore, was presented and delivered a short but interesting address concerning the Baltimore Union Stock Yards and their operation as follows:

Mr. Toastmaster, Members of the Swine Growers' Association, and invited guests:

I first will give you a bit of history as to the receipts of swine from the year 1893 until it reached its peak in the year 1923.

In the year 1893, we had 525,764 head, in the year 1923, we had 1,547,231 head. This you can see was a steady growth of the packing industry in Baltimore. The receipts of swine trucked in have not kept up with the receipts by rail, our records on "drive-in" or trucked hogs in 1921 were 8,130 head as against 12,764 head in 1927, so you can see there is a great field for the swine growers, especially when you bear in mind that this is the best hog market in the whole country with prices higher here than at any Eastern or Western market.

With this situation, there is no reason why the swine growers should not make the growing and feeding of hogs one of the most profitable enterprises on the farm.

A few years back, only light hogs were desirable on this market, but now we use any weights and kinds at the highest market prices of any market. This situation should stimulate the growing and feeding of hogs.

Another thing, the growers and feeders should bear in mind is that this business, like any other, should be continued year in and year out, and if you should have one bad year it is bound to come back stronger later on. Make it a business and STICK, this is the only way to make it profitable. The good years will more than take care of the bad ones, and, if proper methods of feeding are followed, profits will be good.

Our commission men here are all reliable and bonded by the United States Government and will all treat you right. The packers in Baltimore are very desirous of buying all the hogs they possibly can here and we have no complaint to make of the support they give this market.

Gentlemen, I am glad the Swine Growers' Association elected to hold their meeting with us, and hope we may have the pleasure of meeting you here often. The Stock Yards Company wants to coöperate with all livestock interests in the State. (Applause).

At the conclusion of Mr. Baugher's address, which was given close attention by those present, a number of questions were asked and answered concerning the handling of the business at the Stock Yards.

Mr. John H. Zeller, of the U. S. Department of Agriculture, was next presented by President Harvey. His highly important address, which follows, was given close attention by the swine growers present.

SOME IMPORTANT EXPERIMENTS IN SWINE PRODUCTION

BY JOHN H. ZELLER,
Assistant Animal Husbandman in Swine Investigation,
U. S. Department of Agriculture.

Mr. President and Members of Maryland Swine Growers' Association:

The various State agricultural experiment stations, and the field stations of the U. S. Department of Agriculture, have become proving grounds for the activities of the American farmer. Just as manufacturers of automobiles experiment with their new devices to determine the most practical ones before applying them to their cars which go on the market, so these agricultural experiment stations conduct various tests to determine the most practical and economical methods before recommending them to aid the farmer in his farming operations.

The livestock farmers of Maryland are extremely fortunate in having located within their State and within 5 miles of one another, two proving grounds operated in the interest of better methods of feeding and management of livestock. I refer to the University of Maryland Experiment Station located at College Park, Maryland, and the U. S. Experiment

Management of Sows During Gestation

During the past three years at the U. S. Animal Husbandry Experiment Farm at Beltsville, a special study has been made of the feeding and handling of brood sows during the gestation period for spring-farrowed litters. Exercise during the gestation period is essential for strong and vigorous offspring at birth. It is much better for the sow to take this exercise voluntarily than to be forced to take it. A convenient way to feed the grain ration is in the corn-stalk field. When the sows are bred they are placed in a stalk field and given free access to a self-feeder containing 60 per cent. tankage, and a simple mineral mixture. Good quality alfalfa hay is made available in racks and water is kept before them at all times in an automatic waterer. Wheat middlings is fed dry at the rate of 1 pound of mid-

dlings per sow per day. From 1½ to 2 per cent. ration of corn is fed daily depending upon the condition of the sows. We try to have sows gain in weight at the rate of ¾ to 1 pound per sow per day, from breeding to farrowing time. Several days' supply of shelled corn is scattered thinly with a scoop shovel from a wagon in the field. In this manner the sows do not obtain any great amount of corn in a short interval, but are compelled to take plently of exercise while searching for the grain. This method in followed regardless of weather conditions, there being practically no loss of grain through tramping in the snow or mud.

Results of such management show that tankage consumption is about 13 per cent. of the total feed consumption, which is about right for sows developing litters.

As many as 70 sows have been handled in one field with good results and came to farrowing in good physical condition.

This system of feeding tends also to eliminate poor results with thin, timid sows, in that such sows can obtain their feed practically unmolested by other sows.

Self-Feeding vs. Hand-Feeding Sows and Litters

A three-year experiment has been conducted at the government farm at Beltsville, to determine the possibilities of using the self-feeder for sows and their litters during the suckling period. The general plan of feeding was to place the same kinds of feeds in separate compartments of the self-feeder for the sows and litters being self-fed, which were given to the hand-fed sows. The hand-fed sows and litters were fed all they would readily clean up twice daily, while the self-fed sows and litters had free access to the self-feeder at all times.

The results of these tests indicated that:

Self-fed sows and litters were more thrifty than hand-fed sows and litters.

No overcrowding of sows and pigs occurred at the self-feeders even though there was a large number of sows with their litters in one lot.

Less danger of sows and litters overeating exists when feed is available at all times.

Eighty-one per cent. of sows from the self-fed lots when bred, settled at the first service, as against 47 per cent. for the hand-fed sows.

Sows and litters may be put on the self-feeders as soon as the sow is on full feed after farrowing.

A total of 441.06 pounds of feed were required for 100 pounds' gain in the self-fed lots, while 603.09 pounds of feed were required for 100 pounds of gain in the hand-fed lots.

The pigs from the self-fed lots made greater daily gains from farrowing to weaning and also during the various tests in which they were subsequently used.

Self-feeding sows and litters during the suckling period saved both labor and feed.

Value of Pastures

Pasture crops are the foundation for economical pork production and often spell the difference between profit and loss. Almost any kind of a pasture is more desirable and profitable than no pasture at all. Pasture is valuable for all hogs, but especially for pigs, because good pastures are succulent, rich in protein and furnish minerals, such as lime and phosphoric acid, which are often needed to balance these deficiences in the small grain crops.

A rotation on pastures also plays an important part in carrying out the McClean County system of swine sanitation. Hog men are realizing that when pigs are raised on the same old pastures year after year, they suffer heavy losses from intestinal worms and other disorders.

The Wisconsin Experiment Station, after seven years' experiments on the value of pasture crops for pigs, found that pigs on good alfalfa and rape pastures were more than twice as profitable as those in dry lots. All lots were self-fed corn and tankage, the pasture being the only variable. These tests were conducted with pigs starting around 50 pounds in weight and carried to a finishing weight of 200 to 225 pounds. The pigs on pasture gained on the aver-

age a quarter of a pound more per pig per day than those in dry lots. The pigs in alfalfa pasture made this gain with an average of 67 pounds less corn and 21 pounds less tankage per 100 pounds gain than the dry-lot pigs, while the pigs on rape pasture required 66 pounds less corn and 19 pounds less tankage than the dry-lot pigs.

Full Feeding vs. Limited Feeding

There are two methods of carrying pigs on pasture that deserves attention. One is fattening on full feed grain on pasture; the other growing on a limited feed of grain on pasture followed by a period of full feeding in dry lot, prior to being marketed. The Indiana Experiment Station has made a study of the two systems as outlined during seven feeding trials.

The full fed pigs received shelled corn and 60 per cent. tankage self-fed free choice, while those in the limited grain method were hand-fed twice daily in limited amounts of a mixture by weight of 95 parts shelled corn and 5 parts tankage, while on pasture, and shelled corn and tankage self-fed in dry lot during the finishing period. Clover, rape and alfalfa were used during these trials.

The station found little difference in the total amounts of corn actually required to put hogs on the market by the two methods of feeding. However, the corn-price trend seemed more favorable to the limited grain ration. It required on the average 37 days longer for the pigs on the limited grain ration to reach the same market weight as the pigs on the full fed ration. There is much to be said in favor of either system, and the hog man should decide for himself which system best fits into his general farm scheme.

Hogging-Down Corn

The practice of hogging-down corn which has been followed to a large extent in the Corn Belt States for a number of years, is rapidly gaining favor in the East. In the State of Iowa alone, it is estimated that approximately 1 acre of corn is hogged down to every 14 acres grown. This

means approximately 800,000 acres of corn are hogged down annually in that great corn state alone. If the same ratio held for the State of Maryland, approximately 40,000 acres of the Maryland corn crop would be harvested in the field by hogs, thereby saving a large amount of labor at a busy time of the year on the farm, as well as deriving the maximum fertility from the crop and keeping it on the land.

March and April pigs that have received a limited grain ration on pasture during the summer, should weigh from about 90 to 140 pounds and be in good condition to make rapid gains in the corn field.

The problem of supplementing corn with protein feeds is practically the same, regardless of whether the corn is fed in dry lot or hogged down.

Robison, of the Ohio Experiment Station, in summarizing eleven experiments, at five different stations, comparing standing corn alone with standing corn and tankage, found that the addition of tankage increased the rate of gain from 1 pound daily to 1.77 pounds, and the gain from each bushel of corn from 8.8 to 14.2 pounds. With hogs at $10.00 a 100 pounds, the gain from each bushel of corn, when nothing else was fed, was worth 88 cents. After deducting the cost, at 4 cents a pound, of the 4.57 pounds of tankage consumed per bushel of corn, the grain from each bushel of corn, when tankage was fed, was worth $1.24. At these prices the return from each bushel of corn would be increased 36 cents by the use of tankage. Under present conditions of high-priced labor, hogging down corn should return good dividends if efficient methods are properly carried out.

Soy Beans as a Source of Protein

Soy beans as a feed for hogs have been gaining in favor rapidly in recent years, because of their protein content, and the fact that this protein can be produced on the farm. The soy bean, being a legume, is valuable also as a soil builder and for this reason is finding a place in the rotation on many farms.

Soft-pork investigations conducted by the U. S. Department of Agriculture, in coöperation with 12 State experiment sta-

tions have found the soy bean, because of its high oil content, to be a softening feed when fed in sufficient quantities to hogs. Because of its softening character, it is best to feed soy beans as a supplement to corn or other grain feeds, rather than as a basal feed.

During the past several years, experiments have been conducted by these coöperating stations with definite proportions of soy beans in the ration for fattening hogs, to determine the effect of these feed combinations on the character of the pork produced. Studies have been made involving the feed combinations of 3, 6, 9 and 12 parts respectively, of corn to 1 part of soy beans.

The following conclusions have been reached on the 3:1 and 6:1 combinations:

> Soy beans as a supplement to corn in dry lot in the ratio of 3 pounds of corn to 1 pound of soy beans with minerals to pigs ranging up to 130 pounds in starting weights, will not produce firm carcasses in the usual case when the hogs are slaughtered after a gain of approximately 100 pounds or more has been made on the corn-soy bean ration.
>
> Pigs weighing 115 pounds or more and gaining at least 1.5 pounds a day on corn and soy beans 6:1 with minerals in dry lot, through a period of 10 weeks or longer, have produced firm carcasses in the usual case.
>
> Pigs weighing less than 90 pounds and gaining a maximum of 1 pound a day on corn and soy beans 6:1 with minerals in dry lot, through a period of 14 weeks or less, have produced soft carcasses in the usual case.

Experiments on the 9:1 and the 12:1 corn-soy beans combination are still in progress and no definite conclusions have as yet been reached.

Soy beans are rapidly finding their way into corn fields and a great many farmers are growing corn and soy beans in the same fields to be hogged down. Experiments have been in progress for the past seven years and data on hand should, in the near future, throw some light on the character of pork expected to be produced following these methods.

Different Sources of Protein

It has been found that a combination of protein feeds, when mixed in definite proportions, has advantage over tankage as a balancer for corn. For example, the so-called "trinity" mixture, composed of 50 parts tankage, 25 parts linseed meal and 25 parts alfalfa meal when used to displace tankage in the corn and mineral ration, produced more economical and more rapid gains than where tankage alone was fed as a supplement. At the Iowa Station feed requirements for the 100 pounds' gain, when the trinity mixture was used, were 401 pounds as compared with 423 pounds for the best check lot where tankage alone was fed. They also found the cost of gains to be considerably reduced by the use of the three-cornered supplemental feed mixture. Apparently linseed meal and alfalfa meal when combined with tankage make a more efficient mixture and improve the quality of the proteins and minerals in the ration.

Cottonseed meal, when fed (except in small quantities) as a sole protein supplement for any great length of time, has poisonous or toxic effects which often cause death. The Iowa Station substituted cottonseed meal for linseed meal in the trinity mixture, using the mixture of 50 parts 60 per cent. tankage, 25 parts cottonseed meal and 25 parts alfalfa, mixed by weight. The experiment was conducted with fall pigs. They were started on test weighing approximately 50 pounds and were fed 150 days. The pigs on the regular linseed meal trinity supplemental mixture gained at the rate of 1.52 pounds daily per pig as against an average daily gain of 1.65 pounds per head on the pigs receiving the trinity mixture in which the cottonseed meal replaced the linseed meal, the cost of gain was 16 cents less per 100 pounds while the feed requirement per 100 pounds gain was 15 pounds less than the linseed meal mixture. The pigs on the cottonseed meal ration consumed 0.26 pounds of cottonseed meal daily which was approximately only 5 per cent. of the total ratio and no ill effects whatever were noted.

This test indicates that cottonseed meal can take its place economically in such mixtures without producing any harmful effects.

Type and Profit

The hog grower who makes the most profits from his feeding operations is the one who raises pigs of the type to produce rapid gains economically, and such pigs must be well bred. In other words, they must be the offspring of animals that have been selected because they themselves have demonstrated that they were of the profitable and efficient pork-producing type.

With this type of hogs in your herd, keep your eyes on the agricultural papers and the bulletins issued free of charge, from the various livestock proving grounds. They give the latest information and make recommendations for better and more efficient production of livestock.

At the conclusion of Mr. Zeller's excellent presentation of experimental results an active, helpful discussion was participated in by a number of Maryland farmers and Mr. Zeller.

Dr. I. K. Atherton, of the University of Maryland, was introduced by President Harvey, to present the 1927 results of hog cholera in the State.

HOG CHOLERA RESULTS IN MARYLAND IN 1927

By I. K. Atherton.
Inspector in Charge of Hog Cholera Work for Maryland,
College Park, Md.

To take stock at regular intervals, especially at the end of each year, is one of the rules of good business. After the inventory has been made and the balance struck, it should prove a guidance to the partners or stockholders in the concern. This should apply to projects or plans of public service as well as to business institutions. A plan or project that is not conducted in a business-like way will fail just as sure as the business concern will that is conducted in a slipshod manner. The balance for the hog cholera work in

Maryland for 1927 has been struck and I deem it my duty, as well as a great pleasure, to make my annual report to this organization which, as I have often stated before, is the only body representing the farmers of Maryland that is in a position to review the results of the work. It is obvious, however, that reports of this nature must be comprised largely of statistics. Therefore, I am afraid that even after taxing my wits to the utmost, I will be unable to make it interesting, for while the totals vary year to year, approximately the same percentages prevail with almost monotonous regularity.

It sometimes happens with every going concern that the balance is not on the right side of the ledger. This would appear to be the case with the hog cholera work in Maryland for 1927. However, a close analysis often reveals the fact that conditions are not as bad as they appear at first glance. Moreover, if proper consideration is given, the reverses that occur and the lessons which they teach are heeded, they are often of more value than uninterrupted success.

Even though an increase over the annual average number of outbreaks was expected during 1927, it was nevertheless a disappointment that the cases of cholera for the year reached a total of 650, which is approximately 20% above the annual average for an eight-year period. Owing to the extensive outbreak of cholera in the Middle West during the summer and fall of 1926, it was certain that a large amount of infected pork would go into cure, and that more or less of it would reach Maryland during the year through the channels of trade. Realizing that a certain per cent. of the hog owners in the state would, regardless of repeated warning, feed bones, rinds or scraps of this product to their hogs, we predicted a year ago that the outbreaks for the first nine months of 1927 would run above the average. An eight-year average for this period is 292, while the end of September found us with 379 outbreaks recorded or an increase of 30% above the average. When October arrived, we rather expected an average number of outbreaks for the reason that conditions, so far as

hog cholera was conecrned, were about normal in the Middle West. However, the weather man took a hand in the matter and gave us summer weather for that month which prevented any extensive slaughtering of hogs and compelled many owners of swine to purchase pork for another thirty days. Thus we had October running above the average but much below the same month in 1926. The last two months of the year, however, ran much below the average.

Of the 650 outbreaks of cholera reported during the year, 598 or 92% were primary, or new centers of infection. Thus only 8% of the cases reported during the year, or a total of 52 in number, were secondary or due to the spread of the disease from nearby centers of infection. In view of the fact that practically every one of these secondary outbreaks had occurred by the time the primary outbreaks were reported, or did occur within 10 days thereafter, it demonstrated that in every instance the infection had been spread before the primary outbreaks were reported. Therefore, as has invariably been the case since the hog cholera work was inaugurated in the state, the secondary outbreaks were due to laxity in reporting the primary outbreaks rather than to any flaw in the system for preventing the spread of the disease.

The Maryland Plan for the Prevention of Hog Cholera is based on the knowledge that the factors responsible for starting new centers of infection as well as causing secondary outbreaks are comparatively few and easily corrected. Therefore, a review of the sources of infection in the primary outbreaks as well as the agents responsible for the secondary outbreak or spread of the infection from nearby herds, should prove of more than passing interest.

Of the 598 primary outbreaks during the year, 501 were apparently due to infected pork reaching the hogs through garbage, table scraps, kitchen swill, slaughter houses and butcher shop offal, etc. This is 90% of the total cases in which we were able to determine the source of infection. As was the case in 1926, offal from slaughter houses and butcher shops were responsible for many outbreaks by the produce being fed to dogs as well as hogs. For the benefit of those who wonder how the feeding of infected pork

to dogs will cause an outbreak of cholera, we would state that the swine, usually small pigs, escape from the pen and share the meat with the dogs. Of these 501 outbreaks, 69 or approximately 14% were in what might be termed garbage feeding plants, although in several cases only a few hogs were involved. Garbage collected from hotels, restaurants, cities, etc., were fed the animals. 48 of the primary outbreaks were due to the purchase of infected hogs, and in 9 of these cases the hogs were purchased from garbage feeding plants. 7 outbreaks were apparently due to carcasses that were washed in by the tide or left on the farms by departing tenants. 3 were the results of "breaks" following administration of the double treatment. 1 was a recurrence of the disease, 1 case was caused by the administration of virus by mistake. In 37 cases, information on which to base the source of infection was not obtained. In several instances the cases were of doubtful diagnosis while in others the specialists were unable to reach the farms to get the desired data.

Of the 52 secondary outbreaks, 40 were due to permitting hogs to run at large, to line fences or the movement of swine from farm to farm for various purposes. 4 were due to a combination of unburied carcasses and dogs. In one case, a small back yard affair, it was evident that the infection was carried to the hogs while destroying a near-by pen in which hogs had died of the disease. In 7 cases, no history was obtained on which to determine how the infection was obtained by the animals.

An interesting point in connection with the outbreaks this year was the large increase of those of the back-yard type. In 1926 there were 341 cases of this type while in 1927 there were 397. This was an increase of 56 or 16%. This practically accounted for the entire increase in the number of outbreaks in 1927 over 1926, for the total increase was only 64. The remaining 8 occurred on farms which brought the total for outbreaks of that type to 253. This would indicate that hog cholera occurred during the year on not more than .7 of 1% of the farms in Maryland where hogs

are bred and raised for it is believed that there are at least 30,000 such farms.

There was during the year, as is usual, much delay in reporting outbreaks of sickness among swine. However, there was a slight improvement on this score. The annual average percentage of hogs that are sick or dead before the cases are reported is approximately 45%, while in 1927 this dropped to 42%. It is interesting to note that of the 4,168 hogs that were sick or dead before the cases were reported, 393 of them or approximately 9%, were at three institutions. One of these places lost 168 swine and another 100 without having an animal vaccinated. The third lost 215 and had 45 more sick before the serum treatment was administered.

In 1926, the state officials were subjected to much criticism because of a serum shortage for which they were absolutely not responsible in any manner. It was claimed that many hogs were lost that would have been saved if the owners had been able to obtain serum. A comparison of the swine or rather the percentage of herds that were not treated that year with those that were not treated in 1925 and 1927, when plenty of serum was available and at a low price is most interesting. In 1926 there were 44% of the herds that were not treated. In 1925 the percentage that was not treated was 40%, while in 1927 it was 42%.

At the time this report was prepared, questionnaires had been received covering results in 565 outbreaks. These showed the average loss per herd to be 7 hogs. The data on such a large number of herds should enable us to make a close estimate of the losses in the 650 herds in which the disease appeared during the year, and this would show that approximately 4,550 hogs died as a result of the disease. While we have always insisted that over 90% of the outbreaks of cholera in Maryland are brought to the attention of the authorities, it has been our custom to add 20% to the estimated losses from the outbreaks reported in order that we can claim conservatism in our estimates. 20% of 4,550 hogs would be 910 additional animals, or a total of 5,460,—an increase of approximately 10% over 1926. The losses per

thousand for the year will run approximately 29 per thousand against 26 per thousand in 1926. There are no figures available covering the losses in the United States on which we can base comparisons.

The following table which gives the outbreaks by Counties compared with an 8-year average and the percentage of the hogs in the State:

Column No. 1. gives the percentage of hogs in the State
Column No. 2. gives the eight-year average of outbreaks in the county.
Column No. 3. gives the outbreaks reported in the county during 1927.

County	No. 1	No. 2	No. 3
Anne Arundel	3.%	26.	24
Allegany	1.5	6.5	24
Baltimore	7.	22.5	22
Calvert	1.6	6.1	8
Caroline	2.7	7.5	10
Carroll	11.5	14.	11
Cecil	3.9	24.6	10
Charles	3.4	13.2	11
Dorchester	2.2	35.4	34
Frederick	11.3	30.1	30
Garrett	2.	.3	....
Harford	5.2	13.	20
Howard	4.	9.4	10
Kent	2.6	33.5	21
Montgomery	7.1	26.1	30
Prince George's	4.5	27.1	27
Queen Anne	4.2	12.3	38
St. Mary's	3.3	17.1	26
Somerset	1.8	26.3	49
Talbot	2.9	30.2	30
Washington	10.	78.1	57
W.comico	1.6	35.6	39
Worcester	2.5	42.	140
Total		536.9	650

A close perusal of the foregoing table will show that again it is the "little fellow" or small hog owner who is largely responsible for the centers of infection. Worcester County with 2.5% of the hogs in the state turned in 140 outbreaks which is 21% of the total for the year. This is

more than has been reported from any one county in any one year since the hog cholera work was started in Maryland. That county had more centers of infection than Carroll, Howard, Frederick, Montgomery and Washington counties combined, and these five counties have 44% of all the hogs in the state. Moreover, 50% of the outbreaks in these five counties were back-yard affairs. The lower part of the Shore, that is, Dorchester, Somerset, Wicomico and Worcester counties, with a total of 8% of the hogs in the state, had 262 outbreaks or 40% of the total for the year. In fact, it was these four counties that put the balance for the year on the wrong side of the ledger. These counties showed an increase over an eight-year average of 123 outbreaks, while the increase for the entire state was only 113 outbreaks. Therefore, the other 19 counties combined, really showed a decrease for the year under an eight-year average. To illustrate of what little consequence many of these 262 outbreaks were, the records show that 204 or 80% were of the back-yard type, while 162 or 69% of them involved only 5 hogs or less. Moreover, a total of 393 or 60% of the 650 outbreaks in the state involved only 10 hogs or less.

The questionnaires received covering the 565 outbreaks, showed that in 239 cases the animals were not treated while in 326 herds the serum treatment was administered.

The following table gives the results where the serum treatment was used and shows comparative results where the treatment was admisistered by laymen and veterinarians:

	Laymen	Veterinarians	Total
Number of herds	172	154	326
Number hogs on premises when disease appeared	2229	4505	6734
Number died before treatment	287	570	857
Number deemed too sick to treat	152	253	405
Number deemed too sick to treat died	152	249	401
Number apparently well when treated	1351	2625	3975
Number sick when treated	415	813	1228
Number died that were apparently well when treated	151	75	226
Number died that were sick when treated	337	634	971

The above table shows that 95% of the hogs that were apparently well when treated were saved. Veterinarians saved 97% of those which they treated while 89% of those that were treated by laymen survived. Only 21% of those that were sick when treated were saved.

The following table shows results where no treatment was used:

Number of herds	239
Hogs on premises when disease appeared	1,954
Number sick when disease first noticed	276
Number that died	1,578

Note—while this table showed that only 81% died in herds that were not treated, it is really misleading. In such herds many of the well ones are either slaughtered for pork or sold for packing purposes.

As much was again heard during the year relative to universal vaccination with the double treatment being the

solution of the hog cholera problem, we are sure that data covering the use of that treatment in Maryland during the year will prove interesting.

The records show that 154 permits were issued but that eight of them were not used. The 146 permits that were used applied to hogs on only 99 premises. This would show that two or more permits were often obtained for swine on the same place. 84 of these permits were for treatment of hogs in garbage feeding plants. Results of the treatment was investigated in 96 cases and it was found that there were "breaks" following the use of the treatment in 20 places, or practically 21% of the instances. In three of these cases the animals were examined and a definite diagnosis of cholera was made. In the other 17 places the specialists did not get to see the animals while they were sick and owing to difference of opinion regarding these so-called "breaks", no diagnosis was made. However, it is believed that practically all of these were really hog cholera "breaks" and would have been diagnosed as such had the animals been examined.

We believe that the real gain for the year was made outside the state. At the last annual meeting of the United States Live Stock Sanitary Association, held in Chicago in December, 1927, the Committee on Swine diseases brought in the following report which was adopted by that organization.

REPORT OF COMMITTEE ON SWINE DISEASES

of

U. S. Live Stock Sanitary Association

"There have been no unusual features connected with the swine disease situation during the year. The rather high prevalence of hog cholera in 1926 has not continued in 1927. Hog "flu" has proved very destructive, and while there are no statistical data at hand, most observers believe it has been increasing steadily. Parasitic diseases, nerotic enteritis, and various maladies of the young pig have, as always, taken a heavy toll, and it is gardually becoming evident that these diseases disastrous in themselves, also are a retarding influence in effective immunization against hog cholera.

Hog Cholera

"Study of the hog cholera curve from 1887 to 1927 brings out two essential facts.

"First, the curve is favorably influenced by vaccination as it has been practiced.

"Second, vaccination has not been made to govern this curve in a satisfactory manner.

"Your committee believes that for a long time to come vaccination must play an important part in the handling of hog cholera, but that vaccination alone, effective though it is in the majority of herds treated, is not the sole solution of the hog cholera problem. Nor is the mere extension of vaccination, the only, or the most important consideration.

"If every hog in the United States were to be vaccinated, the losses from cholera could scarcely be expected to fall below 2%—20 per 1,000. If the cost for serum and veterinary fees averaged 50 cents per head the loss to the swine industry, valuing hogs at $18.00 per head, would be the equivalent of one in 36 or 28 per 1,000; in all 48 per 1,000. The actual average annual losses during the last decade were 47 per 1,000 plus costs of immunization. Thus it is evident that universal vaccination might distribute the loss, but would not prevent it.

"Your committee believes that some herds require vaccination, others do not; that herds needlessly or improperly vaccinated are a menace to others in the vicinity; that herds definitely threatened require prompt and effective vaccination and that judicious selection and careful vaccination and segregation of herds definitely threatened are all-important measures.

"Your committee recommends that sanitary measures to prevent spread of hog cholera shall be directed at the principal causes known to be responsible for primary outbreaks. These include: the shipping of susceptible feeder hogs, or those but recently vaccinated; the shipping or movement of infected animals; unsupervised feeding of garbage in large or small quantities; improper or inopportune use of serum-virus immunization.

"In the furtherance of this program your committee particularly recommends:

"1. That the feeder should be encouraged to raise his own swine, or to purchase just as far as possible from immune herds.
"2. That hog cholera shall be made a reportable disease in the several states.
"3. That all possible efforts shall be made to avoid public stockyards in the transportation of hogs not intended for immediate slaughter.
"4. That more severe penalties, in the way of condemnations, shall be placed on consignments of hogs which reach stock-yards visibly infected with hog cholera.
"5. That the change in policy regarding condemnations be given publicity in advance.
"6. That the various state sanitary boards take measures looking towards licensing and supervision of garbage feeding plants and rendering plants and the prevention of desultory feeding of collected city garbage.

"7. That the dangers involved in feeding even the home supply of kitchen refuse be brought before swine growers at every opportunity.
"8. That serum-virus treatment of hogs should be practiced only by competent veterinarians.
"9. That the various state sanitary boards and state veterinary societies shall encourage reporting of excessive charges, or negligence, incident to vaccination.

"Recognizing that in the end the lion's share of hog cholera control work must fall on the licensed veterinary practictioner, we recommend to him:

"1. The careful education of his clients regarding the manner in which hog cholera spreads.
"2. The judicious selection of the herds in his vicinity which require immunization.
"3. Careful examination of all herds before vaccination, and the avoidance or postponement of serum-virus vaccination in the presence of devitalizing influences.
"4. Great care in the technique of vaccination, and in the storing and handling of serum and virus; ample doses of both products and strict avoidance of the use of outdated materials.
"5. Due attention to the care of the herd subsequent to vaccination.

"To those actually engaged in raising swine we recommend:

"1. Segregation of the herd so far as is possible, foregoing all unnecessary purchases.
"2. Employment of a method of controlling parasites, such as the McLean County system as outlined by the Bureau of Animal Industry.
"3. Herd breeding and management to prevent some of the sub-virulent infections, and enhance successful immunization where immunization is necessary.
"4. Systematic year-to-year immunization of the season's crop of pigs in herds threatened with hog cholera; in herds not regularly immunized, careful observation and prompt reporting of disease to the local veterinarians.
"5. Avoidance of cut-rate vaccination as applied either to the products used or to the one who uses them.

Your committee regards it as possible that the use of serum more than two years old or virus more than sixty days old may be contributing factors in post-vaccination cholera. It therefore recommends careful observation of the outdating on the labels of both products; and especially does it recommend investigation of all branch distributing centers, as regards storage facilities and handling.

Other Diseases

"Your committee commends the researches on necrotic enteritis and swine dysentery which have been conducted at the Iowa State College and Purdue University, and recommends

that work of this character shall be continued. It also directs attention to the lack of definite knowledge regarding the cause and prevention of hog "flue," and urges that institutions having the opportunity study this disease more thoroughly."

Respectfully submitted,

C. H. STANGE

H. J. SHORE

F. H. BROWN

R. R. BIRCH, Chairman."

A careful study of this report will show that it approves in every detail the principles of the Maryland Plan for the Prevention of Hog Cholera. This we deem all the more remarkable for the reason that the membership of the organization referred to is largely made up of veterinarians from the Middle West where the double treatment has been extensively used as a means of combatting hog cholera.

The interesting discussion which followed Dr. Atherton's important paper, evidenced the interest of producers in sanitation problems.

Following Dr. Atherton's report, President Harvey briefly reviewed the outcome of the 1927 Maryland Litter Contest, as shown in the following tabulations:

Name	County	Pigs in Litter	Farrowed	Breed
McDonogh School	Baltimore	13	March 28	Duroc Jersey
Edwin C. Sauter	"	10	March 13	PC x (½ Berk (½ Ch Wh
Edwin C. Sauter	"	11	March 22	" "
N. Glenn Gordy	Dorchester	8	February 17	Duroc Jersey
Lawrence Bussard	Montgomery	11	March 16	Duroc Jersey
William J. Hines	"	11	January 22	D. J. x Berk
G. Carlton Oland	"	10	March 18	Duroc Jersey
Aubrey Walters	"	9	May 30	Berkshire
Charles White	"	10	January 12	Berkshire
Frederick	Washington	10	April 8	Poland-China

LIST OF SUCCESSFUL ENTRANTS

Name	County	Breed Used	Wt. at 150 days	Date Weighed
1 G. Carlton Oland	Montgomery	Duroc Jersey	2093	August 15
2 McDonogh School	Baltimore	Duroc Jersey	1963* (1976.2)†	August 24
3 William J. Hines	Montgomery	Duroc Jersey x Berkkshire	1859	June 21
4 Charles White	Montgomery	Berkkshire	1685.5	June 11

*Weighed when 149 days old.
†Estimated weight at 150 days.

Mr. G. Carlton Oland, who won the 1927 contest, was introduced by President Harvey, who called attention to the facts, (1) that Mr. Oland has succeeded in bringing a litter to more than 1,500 pounds in 150 days in each of the three contests thus far held, and (2) that Mr. Oland now has two "legs" on the trophy which he won in 1926 and again in 1927. Mr. Oland presented an excellent report of his method of handling the sow and litter as follows:

HOW THE WINNING LITTER WAS PRODUCED

By G. CARLTON OLAND, of Montgomery County.

This litter of ten Duroc-Jersey pigs was farrowed on the eighteenth day of March, 1927. The sow was not given anything but water and a little bran from twelve hours be-

fore until twelve hours after farrowing. The feed was gradually increased until she was on full feed in a few days. She was fed ear corn, and a mixture of wheat bran, wheat middlings, oat middlings, and fish meal.

The sow and pigs were put into a blue grass pasture when the pigs were two weeks old. In a few days, I made a creep for them, in which I put skimmed milk, rolled oats, and a little later, shelled corn.

The pigs were weaned when they were nine weeks old. After weaning, the pigs were self-fed shelled corn, fish meal, and a mixture of wheat bran, wheat middlings, and oat middlings. They were also fed slop containing semi-solid buttermilk and the feed mixture mentioned before. On August fifteenth, Mr. Anderson, the County Agent, weighed the litter for the 150-day 1,500-pound Litter Contest sponsored by the Maryland Swine Growers' Association and the University of Maryland Extension Service. The litter weighed 2,093 pounds, which weight won this cup.

During the week of August twenty-second, the litter was exhibited at the county fair. Here I won nineteen dollars on the litter, fifteen for second on 1,500-pound litter and four for second and third on pen of fat pigs.

On September third, the litter was weighed for the 180-day ton litter contest sponsored by the Maryland State Fair. The pigs were then 169 days old and weighed 2,403 pounds, the approximated weight at 180 days was 2,594 pounds.

The pigs were exhibited at the State Fair at Timonium during the week of September fifth, where I won fifty-eight dollars, fifty dollars for first on ton litter and eight for second on pen of three junior barrows. On Friday of that week, the litter was sent to the Baltimore market.

The cost per pound gain up to 150 days was 7 cents. From 150 to 175 days the cost was 11 cents, and the average for the 175 days was 8 cents per pound gain.

The total receipts including money received for litter and premium money were $341.14. The total cost of feed was $223.07 leaving a profit above cost of feed was $117.07.

Following Mr. Oland's report, the feeders of the litters which won second and third places in the contest told brief-

ly of the methods which they followed. All Litter Contest reports were followed closely by the audience.

Mr. O. W. Anderson, County Agent of Montgomery County, which county has furnished all of the winning entries in the three years of the Contest, spoke briefly concerning the importance of the Maryland 150-day 1,500 pound Litter Contest as a County project in Extension work and urged a larger participation in it. He called attention to the fact that the cost per pound of increase in weight on pigs was much greater from 150 days to 180 days than it was from birth to 150 days,—a fact that is of importance in the production of hogs for market. In a good-spirited challenge to other counties, Mr. Anderson announced the purpose of Montgomery County to win the Association Cup again in 1928. Of course, it is too early to make any predictions, but the outcome of the Contest in past years would indicate that entrants from other counties will need to make some good litter records in 1928 if the cup is to be won outside of Montgomery County. We shall see what we shall see!

President Harvey spoke briefly of the winning in keen competition of the Swine Growers' Association Cup offered at Timonium Fair for the best pen of five pigs owned and exhibited by a member of the Association, by Mr. Joseph Hornberger, Jr., of Harford County. As is the case with the Litter Contest Cup, this Pen of Pigs Timonium Fair Cup must be won by one person three times before it becomes his for permanent possession. This cup was on display at the Swine Growers' Association headquarters at Timonium Fair, and will again be on display at the time of the 1928 Fair. It is hoped that there will be a good showing for this cup in 1928.

The following officers were elected for 1928:

President—W. R. Harvey, Baltimore County; Vice-President, D. B. McDowell, Cecil County; Secretary-Treasurer—B. E. Carmichael, College Park.

Executive Committee—Hobart G. Hutton, Montgomery County; C. A. Dryden, Worcester County; L. A. Short, Caroline County; D. F. Oland, Montgomery County; J. Keiffer Funk, Washington County.

Director of Maryland Farm Bureau Federation for Swine Growers' Association—W. R. Harvey, Baltimore County. Delegate to Annual Meeting of the Maryland Farm Bureau Federation, E. T. Cullen, Cecil County.

Adjournment. Thus ended what it was agreed was the best Annual Meeting of the Maryland Swine Growers' Association thus far held.

REPORT

OF THE

Home and Community Meeting

Maryland Farm Bureau Federation

January 5, 1928

The fifth Annual Meeting of the Home and Community Committee Maryland Farm Bureau Federation was called to order at 9:15 A. M., Thursday, January 5th, 1928, in the banquet hall of the Rennert Hotel. Mrs. Harry T. Williams, Chairman, presided, and after the invocation and a song, called for the reading of the minutes.

There was an unusual large attendance at this session, women representing most of the Farm Bureau counties being present. The reports of the various county chairmen were interesting and encouraging, as they always are,—the women giving detailed accounts of their activities during the past year and of the local and county units in their respective sections of the State. These reports showed plainly that the women are working with the men in trying to improve conditions in the homes, on the farms and in the communities.

Some of the outstanding pieces of work reported by county chairmen are as follows: Very successful Farm Bureau Exchanges are doing increasingly important work, bringing excellent prices to the Farm Bureau member for her products and giving its purchaser fresh, wholesome food direct from the farm.

The Lunchroom and Exchange maintained at Timonium Fair by one of these groups of women has become famous and can scarcely take care of the crowds.

Most of the reports showed that Farm Bureau women as well as men were doing all in their power to help 4-H Club work.

Many banquets and social get-together meetings have been arranged by Farm Bureau women and they have added much to the interest and enthusiasm of the regular meetings.

Short courses have been arranged with the aid of the men. Special programs of interest to women have been given. Much work has been done in opening Library Branches in rural sections and in aiding libraries in schools. Poultry work and improvement have received much attention from these groups of women. Health programs have been arranged and in one county several nursing classes for rural women and girls were arranged under Farm Bureau auspices.

One community earned money to buy musical instruments for their school. This chairman says, "Our Farm Bureau has been the means of giving us county-wide contact and sociability." A play, successfully given, was also reported.

One of our big Farm Bureau counties reports that the Farm Bureau, Grange and Women's Clubs are doing a lot of community work coöperatively. Their school grounds have been beautified, pre-school age health clinics held, and other community welfare work accomplished. One local in this county which has a very active Home and Community Chairman reported eleven meetings held during the year. Her advice was, "Don't give up your local meetings!"

Farm Bureau women have worked shoulder to shoulder with their town and city sisters in helping enlarge libraries and rebuild hospitals. "Better Homes Week" was participated in by a number of Farm Bureau groups, and music week, Arbor Day, Forestry Week, and Community Christmas Celebrations received the help and encouragement of others. "Community Sings" was mentioned as one worth while thing sponsored by Farm Bureau women,, while another spoke of recreational stunts participated in by groups. Helps in nutrition, better school lunches, some cooking demonstrations by county demonstration agents, teachers and home economics students, all had their part in Farm Bureau women's programs. One local furnished Prof. Rice, of the University of Maryland 30 turkey eggs,—out of the

hatch from these he kept his breeders for 1928. As the Chairman says, "Quite an honor to start the State University in the Turkey Business."

The Home and Community Departments have helped with health drives, Red Cross work, Christmas Seal sales and any and all work for community betterment.

One chairman sums up by saying, "I believe that anything which helps the individual, the community or the county is the work of the Home and Community Committee of the Farm Bureau.

The spirit of optimism prevailed and many women testified that they felt they could go home and do more and better work.

After the report of the county chairmen and discussion, Miss Mary Nims, of Louisiana, Chairman of the Southern Region of Home and Community Work of the American Farm Bureau Federation, was introduced and was given a cordial welcome. Miss Nims immediately launched into an urgent appeal for more of the true community spirit among the rural women of the state, which, she insisted, together with civic pride, would aid in their efforts to elevate the social and economic life of farm folk.

Much of her splendid talk was of the farm life of the people of Denmark, where she recently spent several months studying agricultural conditions in the homes and on the farms. She spoke of the keen pride the Danish farm women take in their homes, and the interest they take in social and economic affairs of the small communities in which they live; and of their coöperative and community efforts and endeavors which Miss Nims said, had made for them a commanding position on the agricultural horizon. And she added: "Their homes, their neat, well-kept farms and their abundant crops are all outstanding memorials to their thrift, giving unmistakable evidence of what coöperation and the community spirit can and will do for farmers, not only in Denmark, but in Maryland or any other state or country."

"If we can, as farm women, get the spirit, I wouldn't miss a meeting of my Farm Bureau for anything. If you will give yourself at your best, that is the thing your com-

munity needs. That is the community spirit of the men and women of Denmark."

The farmer is the *big man* of Denmark. Denmark is an agricultural land and the best brains of the country are running the farms.

Sixty years ago the Danes were, to quote them, in a terrible condition, and came together to learn how to rebuild. They decided that if they increased the earning capacity of their farms they would build up every other type of business. On their small farms production is perfect. Many small holders have lovely homes and are educating a family on fifteen acres. There is not an unpainted house nor an unlandscaped garden in the nation. Every farmer is a student and has his library on crop rotation, diversification, soil improvement, etc. Every farmer is a business man, dealing with business men.

"During our visit there," Miss Nims said, "we all went to community meetings in the evenings. There would be six or seven hundred people, mostly traveling on bicycles. The Danes belong to many organizations, coöperative associations, etc.,

In Denmark they build their community organization, corresponding with our Farm Bureau, from three standpoints,—business, social and civic. All that is needed is mutual understanding. They go to think individually and to cull out the best, and act collectively. They have built up a wonderful business in dairying, poultry products and hog production.

Miss Nims urged that communities be built from a civic standpoint, saying that the greatest thing for any community is civic pride.

"The greatest tragedy is *Not* to meet the conditions and circumstances which are confronting us. We must work shoulder to shoulder to conquer difficulties. Let's stand together and obstacles will stand aside."

The thinking farmer is an asset to the banker and the merchant; while the *unthinking* farmer is a liability; and the merchant and banker who want to keep the farmer unthinking is the greatest liability the farmer has. Miss Nims

continued: "I am glad to be working on this farm problem and with you farm women who stand for all that is finest and best. The life of a good woman in a social way is the greatest contribution she can give a community. Men will bring their customs and standards up to hers. Let us, as women of the farm, have the highest social standards and set the best example we can to the younger generation."

In closing, Miss Nims thanked the Farm Bureau folks for their courtesy to her, saying nowhere had she ever been received with as warm-hearted hospitality as in Maryland. She was not even allowed to live at the hotel, but was made one of the "family" at Mrs. Isaac Dixon's beautiful town house.

Miss Vera McCrea, of the Dairymen's League Coöperative Association of New York, when called upon for a word said she was very sure there was a definite place for women in this great Farm Bureau movement.

Miss V. M. Keller was also asked to say a word to the group. She responded by saying she was always interested in any meeting of farm women. She further stated that she had been criticised for using so much of her time and her Demonstration Agents' time helping other groups than farm women, but that these village and town women say they are tax payers and want help also.

Mr. E. P. Cohill, first president of Maryland Farm Bureau, Mr. E. T. Massey, Vice-President and Dr. T. B. Symons, of the University of Marylnad, also responded with helpful suggestions and words of encouragement to the women who are trying to help their "men folks" solve some of the problems which confront the farmers.

Mrs. Harry T. Williams was unanimously chosen chairman for another year, and immediately reappointed Mrs. M. M. Stewart, secretary of the committee. In accepting the State Chairmanship for another year, Mrs. Williams expressed her enthusiasm in the work and her eagerness to help in the development of a genuine community spirit and a civic pride among the Farm Bureau women of the state. She

asked for the fullest coöperation of all the farm women in all the counties.

Mrs. Isaac H. Dixon, who with Mrs. Williams, attended the meeting of the American Farm Bureau Federation in Chicago in December, was to have given a report, but because of hoarseness and the lateness of the hour, asked to be excused.

There being no further business, the meeting adjourned.

REPORT

OF

Boys' and Girls 4-H Club Conference

Wednesday, January 4, 1928

Baltimore, Maryland

Miss Dorothy Emerson acting as chairman, explained that the program had been made up with a view of presenting what the Extension Service has to offer as a menu that enables rural boys and girls to develop Head, Heart, Hand and Health.

MEAT—SUBSTANTIAL FACTS

MISS ETHEL REGAN,
Home Demonstration Agent, Prince George's County.

Miss Regan spoke on the tendency of the teen-age to congregate in groups or organizations and stressed the fact that the 4-H Club meets this need through its worth while work and play program. This is a habit forming age, she said—the teen age. And now is the time to teach girls and boys, not when they grow older. We need to teach them to be home loving to feel their responsibility in the community. Miss Regan told the leaders that a live club is a real asset to any community, and the need is to find the interest of the local girls and boys and then build on this interest with true, practical information. Every one realizes how necessary true encouragement is for the progress of an individual or an organization. If our girls and boys are to get the most out of their 4-H club work they need constant contact with older leaders who can advise with and

guide them. The home demonstration agent and county agents can not do this because of their full program and they need the assistance of local leaders in the community who can give personal interest to the individual club member. Only as we have this help from local leaders can we expect to develop fine rural leadership among our 4-H club members.

VEGETABLES—LOCAL LEADERS

MRS. S. H. FADELY,
Local Leader of Millersville 4-H Girls' Club.

LIBRARY, UNIVERSITY OF MARYLAND

It gives me great pleasure to be here and to be on this menu, even though some of you may say, "Well, I never did like turnips, or cabbage, or spinach," but maybe you do like sweet potatoes, or carrots, or some of the other vegetables and will be willing to listen to the few words I have to say.

I want to say a few words in behalf of the 4-H Club Organization. I think it one of the finest organization for young people in that the mind or head of the boy or girl must be trained to think, plan and reason, and the heart to be kindly and sympathetic toward the work and toward associates, so that all might work together. The health must be improved and kept good for efficiency and enjoyment, and the hands must be trained to be skillful.

The symbol of the 4-H Club, as you all know, is the four leaf clover containing an H on each leaflet, the clover signifying the purpose for which the first clubs were created. Soil Conservation.

I shall not attempt to tell you the relation of the vegetable to the menu, for I fear it is a task I am not quite equal to.

I will say, however, that I do think that a local leader can do much to encourage the work of the 4-H Club.

I have been interested in 4-H Club work since the years 1914-15, when I was a club girl over in West Virginia, under the leadership of Miss Ethel Burdett, and under the State leadership of Miss Sada R. Gooseman. The train-

ing I received there in that club has stayed in my mind these several years. I think to be a successful local leader, one must be familiar and extremely interested in 4-H Club work, and be willing to see the work as the individual sees it.

I am at present one of the local leaders of the 4-H Club of the Arundel High School. We no doubt have a very unique club in that we have two local leaders for one club. Mr. Fadely being leader for the boys and I being leader for the girls. We have 40 minutes every Monday afternoon (during the school year) at which time I meet with the girls to do their sewing or canning. Mr. Fadely meets with the boys to discuss problems relating to the boys projects. We meet in a general meeting once a month in the evenings, at which time we have our business meeting and social.

Monday afternoon of each week, 40 minutes or the last period of our school day, is devoted to club activities. This will explain why it is so convenient for our club to meet once a week.

Last year, I had 11 girls carrying 19 projects, all with the exception of one was completed. Some of the girls carried 1, 2, 3 projects. One girl carried 5 projects and completed 5.

This girl, Erna Riedal, I think deserves mentioning. Erna is a very enthusiastic girl. While she has never been President of our club (this office always being held by a boy) she has been an outstanding club member. She has carried a poultry project for four years in which she is building up a purebred flock of poultry. She won a trip to Madison Square Garden as a member of the Maryland State Poultry judging team where she won honors as a judge of poultry for production. She has won several prizes by exhibiting her poultry. She has also won a silver loving cup at the Junior Egg Laying Contest conducted at the high school.

This year, Erna continued her poultry project, also poultry project No. 2, in which she attempted to raise 100 chickens to be used at Camp Vail by the Maryland fried chicken demonstration team. In this she was less successful, due

to the fact that she stepped on a nail and was confined to her bed when her baby chicks needed her most.

Erna carried successfully a fourth year sewing project, a second year canning, and an own-your-own-room project, which proves that she is not only a money maker but a home maker.

Jordan Dorsey, another one of our club members I wish to recognize, of whom you will hear later.

As a social function, our club has annually a picnic in June or before school closes.

This fall, our club members gave an entertainment and cleared $60, to be used for club purposes. Our club also has an exhibit each fall at which time the girls bring together their sewing and canning, and the boys bring their live stock and vegetables. The community is invited to take part in this exhibit.

Nine of our club members attended club week at the University of Maryland last year. This year we hope to have more.

Mr. Fadely and I attended and we enjoyed it as much as we did our 10 day visit into West Virginia and Ohio.

I advise any club that is the least backward in enthusiasm to pay every club member's way to State Club Week.

It is wonderful. I cannot begin to tell you how it helped our club members. They were bubbling over with good things at our first club meeting which was the club week echo meeting. Every one mentioned the good fellowship and sportsmanship shown by the club members and faculty. Some of them said they had never had a better time in their life.

I have gained new enthusiasm and new life by the little time I spend with my club members.

I like to repeat the club motto, "To make the best better", and the club pledge:

I pledge my head to clearer thinking
My heart to greater loyalty
My hands to larger service
And my health to better living
For my Club, my Community and my Country.

I like above all to think it develops the highest type of manhood and womanhood and American citizenship.

VEGETABLES—NATURE'S COMMUNITY TONIC

MRS. L. A. SUTTON,
Local Leader 4-H Girls' Club, Kent County.

Just as we need vegetables in the body for a tonic so does club work need certain tonics to make the program more interesting and broadening. A 4-H Club may simply do a piece of project work and never be heard of in the community. However, when the club begins to put on demonstrations, send their exhibits to the State Fair, look ahead to participation in county and state activities, they begin to take on new life and the public hears of their work. Mrs. Sutton told of the influence of club work on one girl in particular, whose parents had no education. This girl, one of seven children, and because of her interest and activity in the club, her parents would come with the whole family and attend all the community extension meetings.

In Mrs. Sutton's community, the mothers often visit and learn with the girls, take a vital interest in the progress of their daughters and so support the local leader in whatever she tries to do. Mrs. Sutton has long been connected with 4-H Club work. Two of her sons have been in club work for a number of years, Stanley Sutton in 1925 winning a place on the Maryland judging team that went to Europe. Mrs. Sutton's small daughter is now starting in her career as a 4-H Club member. When mothers are interested enough to encourage their own children to take up club work and then serve as a local leader themselves, you may be sure that 4-H Club work in that community is going to succeed.

SALAD—IGNITION SPARKS

This was to have been discussed by Sara Robinson, of Harford County. Mr. W. H. Evans, assistant county agent of that county, explained that Sara was ill and in telling of her ability to get others to realize and exert their powers, he indicated how outstanding 4-H Club folks may be the vital spark in the Extension menu.

ROLLS AND BUTTER—STAFF OF LIFE

Mr. W. R. McKnight, county agent, Dorchester county, led the group in singing Dreaming and Plowing Song.

ICE CREAM AND CAKE—CAMP VAIL AND NATIONAL CONTESTS

STANLEY B. SUTTON,
Local Leader of 4-H Boys' Club, Kent County

Mr. Sutton told of the National contests and Camp Vail as they would apply. These are an inspiration to club members; the trips make them come back home determined to work harder for their home community.

MILK—FOR GOOD HEALTH

E. G. JENKINS, State Boys' Club Agent.

Mr. Jenkins stressed the point that 4-H Club work is a live and vital influence in the living of lives quite as much as it is in the making of livings.

AFTER DINNER MINTS—SATISFIERS

This consisted of short talks by Mrs. J. W. Jones, Olney, Mrs. M. M. Stewart, Gambrills, each of whom stressed the point that we should start club work with the young people when they are in the enthusiastic age.

Miss Edythe Turner, home demonstration agent, of Baltimore County, said that local training schools are most needed.

Miss Helen Andres, Mr. M. M. Stewart and several others also contributed a few after dinner mints.

Miss Emerson, in summing up, stressed the following

(1 The value of organization.

(2) The thought of the home.

(3) The need of encouragement.

(4) The need of broadening activities.

(5) Give the boy and girl a larger vision.

Mr. Evans made the motion that a committee from the group present be named to plan the program for 1929. This motion was seconded and carried. It was moved and seconded that the chairman appoint the committee.

The committee as appointed were:

Miss Regan,

Mrs. L. A. Sutton,

Mr. Evans,

Mr. Stanley B. Sutton.

The meeting adjourned after singing "The More We Get Together."

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